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RECENT ADVANCES IN PERNICIOUS ANEMIA, THE HYPOCHROMIC ANEMIAS AND THE HEMOLYTIC ANEMIAS

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IN THIS paper the recent advances in pernicious anemia, the hypochromic anemias and the hemolytic anemias will be discussed. Due to space limitations, the discussion will necessarily be brief.

Pernicious Anemia

In the twenty-three years which have elapsed since Minot and Murphy announced their discovery of the value of liver in the treatment of pernicious anemia, there has been an unremitting search for the substance in liver which makes it efficacious. Beginning with Cohn's successful preparation of a liver extract in 1927, repeated efforts were made to further purify and concentrate the effective material, with the result that for a number of years we have had available a number of relatively refined, stable, liver extracts. These extracts have been eminently satisfactory in the treatment of pernicious anemia. Administered properly, they have maintained normal blood levels, have prevented or improved the neurologic complications and, in general, have permitted the patient with pernicious anemia to live out a normal life expectancy.

However, there have been certain problems. For example, occasional patients have developed anaphylactic reactions to these materials. More important, however, was the disturbing fact that certain anemias which seemed morphologically identical with pernicious anemia were more or less

refractory to these refined liver extracts. These entities, namely, sprue, pernicious anemia of pregnancy, pernicious anemia of infancy, tropical or nutritional macrocytic anemia, and so-called "achrestic" or "refractory" megaloblastic anemia, nearly always presented the megaloblastic bone marrow and the macrocytic anemia so characteristic of pernicious anemia. Yet the same liver extract which produced such rapid maturation of immature cells in the pernicious anemia marrow frequently failed in these similar conditions, whereas crude liver preparations, especially by mouth, often produced satisfactory results. The partial solution of this enigma has been an achievement of the past three years.

In 1945, following a series of apparently unrelated experiments in animals by other workers, Spies and Vilter and their associates announced that folic acid, a member of the Vitamin B complex, was highly effective in pernicious anemia. In rapid succession, this was followed by a number of equally electrifying reports. Sprue, both tropical and nontropical, was found to respond to folic acid in spectacular fashion, in nearly all instances. Pernicious anemia of pregnancy, the megaloblastic anemia of infancy, and the nutritional macrocytic anemias were likewise found to respond sharply to minute doses of this material. Folic acid appeared to be a discovery of the first magnitude, and an editorial in the journal *Blood* in 1946, called it "the wonder drug of the year."

It was puzzling, however, to learn that refined liver extract contained only traces of folic acid,

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quite insufficient to account for its potency in pernicious anemia. Similarly, it was disturbing to find that many cases of pernicious anemia treated with folic acid exhibited sub-optimal reticulocyte responses. But the crushing blow came late in 1947, when the first reports appeared concerning neurologic relapse¹¹ in pernicious anemia patients treated with folic acid. It soon became obvious that folic acid, or pteroylglutamic acid, as it was then renamed, not only failed to prevent neurologic complications but seemed actually to encourage them, possibly because of interference with normal utilization of glutemic acid by nerve tissue. In any event, it was obvious that pteroylglutamic acid could not replace liver extract in the treatment of pernicious anemia, valuable though it was in the treatment of related states.

In spite of this disappointment the search went on, using various lactobacilli as experimental animals, and it was only a few months later that vitamin B₁₂ was discovered by Short, isolated by Rickes, and proven by West to have almost unbelievable potency in the treatment of pernicious anemia. As Dameshek has said, "Here is a substance that, when given to a patient with pernicious anemia, results in a maximum reticulocyte response and a near maximal erythrocyte response following a *single* injection of 5 to 10 thousandths of a milligram. Has there ever been in the history of medicine a more potent material, microgram for microgram?" Nor is this all. Unlike pteroylglutamic acid, vitamin B₁₂ has been shown to be equally potent in the relief not only of the neurologic complications, but of the mucous membrane lesions as well. In other words, at this time "vitamin B₁₂ appears to be the long-awaited 'liver extract factor,' normally formed by the interaction of extrinsic and intrinsic factors. Furthermore, these discoveries permit us, as Dameshek has pointed out, to make at least a tentative classification of the megaloblastic anemias, based on etiology. Thus it appears at the present time that Addisonian pernicious anemia and a few cases of sprue are exemplified of "pure" vitamin B₁₂ deficiency, whereas most cases of sprue, tropical macrocytic anemias, nutritional macrocytic anemias, so-called "refractory" megaloblastic anemias, pernicious anemia of pregnancy, and megaloblastic anemias of infancy represent deficiencies of folic acid.

It is obvious that there are still many gaps in our knowledge regarding the causes of the defi-

ciencies themselves, but at least we now have a working basis for the treatment of what has previously been a most difficult group of diseases.

In addition to these fundamental discoveries, there is one further point regarding the management of the case of pernicious anemia which cannot be emphasized too strongly. It has been suspected for a long time that atrophic gastritis and achlorhydria may be precursors of two diseases with which they are notably associated, namely, pernicious anemia and carcinoma of the stomach. It has remained for recent statistical investigations, notably those of Rigler and his associates, to prove the melancholy fact that pernicious anemia is the blood-brother of gastric cancer. The incidence of stomach cancer in the pernicious anemia patient is at least four or five times as great as in other individuals in the same age group, and may well reach 15 per cent. The importance of this is clear. The treacherous silence of carcinoma of the stomach is well known, and one cannot wait for symptoms in the patient with pernicious anemia before advising x-ray examination. The patient with pernicious anemia must be *routinely* subjected to gastrointestinal x-ray examination, preferably every six months. There can be no compromise with this program, any more than one can compromise with the routine examination of the blood and the routine administration of specific therapy in these patients.

The Hypochromic Anemias

Recent studies in the field of the hypochromic anemias have been mainly concerned with fundamental observations regarding iron metabolism, rather than with clinical problems, but these investigations, often involving the use of radioactive iron, have been experimental proof of our general concepts of iron deficiency. Thus, the use of these tracer materials has proven conclusively that four to five times as much iron is absorbed in human beings when it is administered in the ferrous form as opposed to the ferric. The effect of achlorhydria in reducing absorption of iron from food, the depressing effect of alkalis on iron absorption, and the unimportance of such materials as copper and molybdenum in clinical iron deficiency have been re-emphasized.

There is still no evidence that iron ever needs to be administered parenterally, and there is likewise no evidence that any combination of iron with liver, with vitamins, or with folic acid is of

any advantage in the treatment of hypochromic anemia.

In this connection, it is well to remember that the great majority of anemias failing to respond to specific therapy fall into one of five categories: (1) unsuspected blood loss; (2) the anemias of chronic infection, particularly infections in the genito-urinary tract, the lung, the bones and joints, and in the blood stream; (3) the anemia of chronic renal insufficiency; (4) the myelophthisic anemias, due to throttling of the marrow by leukemia, by Hodgkin's disease, or by cancer; and (5) the hemolytic anemias. Failure of a normochromic or hypochromic anemia to respond to iron should immediately direct attention to these categories.

The Hemolytic Anemias

The hemolytic anemias, in spite of their comparative rarity, have received increasing attention in recent years from both diagnostic and therapeutic points of view. Thus, the introduction by Watson of quantitative methods for the determination of urobilinogen in feces has been of value not only in the differential diagnosis of jaundice but in proving beyond question the existence of a hemolytic process. Sharp increases in fecal urobilinogen may be, in fact, the only evidence that an obscure anemia is a hemolytic one. In most instances, however, the simultaneous presence of anemia, acholuric jaundice, and reticulocytosis, with or without splenomegaly, are the signs which lead to the proper diagnosis. Among other diagnostic aids one may mention the presence of spherocytes, particularly in familial hemolytic jaundice, target cells in Mediterranean anemia, and sickle cells in African hemolytic anemia.

With regard to specific hemolytic syndromes, there are several about which interest has centered in recent years. For example, paroxysmal cold hemoglobinuria was formerly thought to be almost exclusively a complication of syphilis. It is now known, however, that it may also appear simultaneously with the appearance of cold agglutinins. Since these antibodies occur with great regularity after viral pneumonia, it is evident that one must be on the lookout for the occasional appearance of the hemolytic syndrome. The first symptom is frequently the appearance of Raynaud's phenomenon in the extremities, and the literature records at least one instance where the extreme pallor of a foot in this connection was mistaken

for an acute arterial thrombosis, following which the foot was packed in ice. Gangrene developed a few hours later, the syndrome was then recognized, and the foot fortunately saved.

The whole complex subject of erythroblastosis fetalis and Rh is likewise included under the heading of the hemolytic anemias. The immunohematologist is the only one who can discuss the ramifications of Rh, and the pediatrician is quite properly charged with the responsibility for the care of the erythroblastotic infant. I should like to point out, however, the potentialities of Rh haptene in the prevention of erythroblastosis. From the early reports, it would appear that the administration of this partial antigen to the Rh-negative mother during the latter part of pregnancy can be very effective in the prevention of erythroblastosis in the Rh-positive child.

From the internist's point of view, perhaps the most interesting and significant development in this field has been the extension of the concept of hypersplenism. The functions of the spleen are still mysterious, but it has become increasingly clear that its unexplained overactivity is the common denominator of a number of hematologic diseases. It has been known for a long time that splenectomy was of great value in congenital hemolytic jaundice, and for a shorter period its value in true thrombocytopenic purpura has been recognized. Similarly, primary splenic neutropenia has been found to respond to excision of the spleen. Of the so-called "idiopathic" acquired hemolytic anemias, some 60 per cent have been found to respond favorably to splenectomy. Most interesting is the concept of "symptomatic" hypersplenism. In this condition, which may be a feature of any disease in which splenomegaly is normally found, the enlarged spleen may be responsible for the abnormally low level of any blood element. Most commonly this is the red blood cell, and thus the syndrome of "symptomatic" hemolytic anemia may be found in such diverse diseases as leukemia, carcinomatosis, Hodgkin's disease, and cirrhosis of the liver. I have even observed thrombocytopenic purpura with such relatively benign lesions as sarcoidosis of the spleen. The importance of the recognition of this process is self-evident, since the removal of the spleen may permit even those individuals with serious underlying disease to extend their useful lives by several years. For example, a patient

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LEUKEMIA, LYMPHOBLASTOMA AND POLYCYTHEMIA VERA

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LEUKEMIA has been known for over 100 years; still the nature and etiology of the disease are unknown. There is no cure for leukemia, and the therapeutic agents used in the disease are palliative in their effect. Patients with leukemia are made more comfortable by treatment despite the fact that it may not prolong life materially. In general, the indications for treatment in the chronic forms of myeloid and lymphatic leukemia are the appearance of signs and symptoms of anemia, hemorrhagic manifestations, pressure effects from an enlarged spleen or from enlarged lymph nodes or evidence of leukemic infiltrations in other organs.

Chemotherapy.—Arsenic in the form of potassium arsenite has been used in the treatment of chronic myeloid leukemia for many years. Arsenic administered by mouth over a long period of time has been followed by a gradual return of the leukocyte count to normal, associated with a rise in the hemoglobin and red blood cell count. The blood platelets are not depressed, and arsenic may be used in the leukopenic phase of the disease. The splenomegaly decreases, and the patient may appear clinically well. The initial dose is 3 to 5 minims of Fowler's solution in orange juice or milk, given three times daily after meals. After several days the dose is increased by 1 minim daily to the point of tolerance or the point at which the leukocyte count is normal. The serious objection to the use of Fowler's solution is development of toxic symptoms, namely, loss of appetite, nausea, vomiting, diarrhea, dermatitis, neuritis and renal irritation. The drug eventually has to be stopped in all cases, and this is usually because of its effect on the skin. Satisfactory remissions of from three to eighteen months have been maintained with Fowler's solution.

Urethane (ethyl carbamate) as a therapeutic agent in the treatment of leukemia was first reported by Paterson, Thomas and Haddow in 1946. In selected cases of chronic myeloid leukemia, urethane will produce a rapid fall in the white blood cell count and a nearly normal blood pat-

tern. The dose is from 1.0 to 5.0 gm. daily administered by mouth (7½ grain tablets or 5 grain enteric-coated tablets). It may also be administered parenterally, although the intravenous route is not without danger. Remissions in chronic myeloid leukemia may be maintained with urethane as long as a proper dose is given. If the drug is stopped or if the dose is decreased, the leukocyte count steadily and rapidly rises, only to drop again with institution of adequate urethane therapy. The red blood cell count and hemoglobin values are improved during this treatment. The enlarged spleen decreases in size, but in our experience it never receded to its normal size. It is our impression, from a study of approximately 100 cases of leukemia, that some patients are made chronically sick while on urethane therapy in spite of the decrease in the leukocyte count and the recession in the size of the spleen and lymph nodes. Some patients experience anorexia, marked nausea and vomiting, or may show toxic symptoms in the form of anemia, agranulocytosis and thrombocytopenia. The drug may aggravate the gastrointestinal bleeding in cases of chronic myeloid leukemia. Urethane is generally more effective in chronic myeloid leukemia, although a reduction of the leukocytes to normal with a decrease in the size of the lymph nodes is frequently observed in chronic lymphatic leukemia. Acute leukemia is not benefited by the drug, although a temporary remission was induced in two of our cases. There is no evidence from our series of cases of leukemia that urethane prolongs the life expectancy of patients with the disease.

Nitrogen Mustards.—The application of these groups of compounds in the treatment of leukemia, Hodgkin's disease and other lymphomas has been evolved from their marked cytotoxic effects. The dose of nitrogen mustard is usually 0.1 mg. per kilogram of body weight given intravenously daily for four to six days. Because of the rapid hydrolysis, the solution is freshly made by dissolving 10 milligrams of the drug in 10 c.c. of sterile isotonic solution of sodium chloride. The calculated dose is then immediately injected into

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the rubber tubing during the course of an intravenous infusion of saline solution in order to avoid its contact with the patient's subcutaneous tissue or skin. Thrombophlebitis may also occur. Because of the toxic action of nitrogen mustard on the hemopoietic tissues, a complete blood count including a platelet count should be performed daily during the course of the treatment. Nausea and vomiting, often severe, are common in many cases one to three hours after the administration of the drug. Repeated remissions of six and twelve months have been obtained in several cases of chronic myeloid leukemia. Somewhat better results have been obtained in the treatment of chronic lymphatic leukemia. Practically all the patients treated have responded to the initial course of the drug with remissions which lasted from two to twenty-one months. Nitrogen mustards are of little or no value in acute leukemia. In general, nitrogen mustards are not superior to roentgen rays in the treatment of leukemia, although occasionally they are useful in radio-resistant patients.

Folic Acid Antagonists.—These drugs were first used by Farber and his associates in February, 1947. The folic acid antagonists (aminopterin, a-methopterin and amino-an-fol) have produced temporary remissions in only about 50 per cent of acute leukemias in children. The dosage schedule usually employed in our cases of acute leukemia in children is 1 mg. of aminopterin intramuscularly daily for three to four days, followed by 0.5 mg. daily until there is conversion from a "blast" type of bone marrow to a normal pattern or nearly so. An attempt is then made to maintain a normal blood and bone marrow by the oral or intramuscular administration of 2 to 5 mg. of methopterin daily. In a series of ten cases of acute leukemias in children, five have died; the remainder have been maintained in a state of remission varying from four to eleven months. Aminopterin is a very potent and toxic folic acid inhibitor. Toxic effects noted in our patients include severe leukopenia, severe depression and aplasia of the bone marrow associated with a severe anemia, leukopenia and thrombocytopenia in the peripheral blood, rectal bleeding, hematemesis, ulceration of the mucous membranes of the oral cavity and anus, loss of hair and hemorrhagic infiltration of the skin. The bone marrow changes may be rapid, profound and irreversible.

Fatalities have occurred for this reason. The margin of safety between a toxic reaction and death is at times very small. This is especially true in acute leukemia in adults. There is no evidence that folic acid antagonists cure leukemia. The use of the drug in chronic leukemia is limited by the early development of toxic phenomena.

Roentgen Ray Therapy.—For many years, since 1903, roentgen irradiation has been the most generally employed as well as the most successful treatment for chronic leukemia. The reduction in size of large glandular masses or an enlarged spleen improves the general physical condition of the patient. An elevated white cell count in itself is not an indication for irradiation. It is doubtful whether there is any advantage in treating those patients who are symptomless.

In spite of the fact that for many years roentgen therapy has been the method of choice, there is considerable controversy as to the type of treatment to be used. Some radiologists prefer local treatment to the spleen, enlarged lymph nodes and the long bones. Recently the use of small doses of x-rays to the whole body has proved successful in treatment of chronic leukemia. Reactions are less likely to occur with the "spray" technique. Total irradiation is not very effective in reducing a greatly enlarged spleen or marked adenopathy. In many instances the technique used will depend on the facilities available. During the first series of treatments it is wise to proceed cautiously, since there is considerable difference in the reactivity of patients to irradiation. Treatments can be given daily, two or three times weekly or less frequently. The white blood count and differential blood smear serve as a partial guide to the intensity and frequency of roentgen-ray exposure. It is generally agreed that the improvement is manifested by reduction in size of the spleen or lymph nodes and increased red blood cell count.

Symptoms of irradiation sickness include anorexia, nausea, vomiting and diarrhea. This reaction is more likely to occur when the upper abdomen has been treated. The intensity of the systemic reaction depends on the area of body surface treated, the portion of the body exposed and the dosage.

Radioactive Phosphorous.—In chronic myelogenous leukemia, P^{32} is effective in producing clinical and hematologic remission. Following

the use of P^{32} the leukocyte count decreases and the percentage of myeloblasts and myelocytes diminishes. The erythrocyte level increases in most cases. Clinically, asymptomatic improvement is noted with reduction in size of the spleen and lymph nodes. Because of the wide variation in the dosage of radioactive material required to restore the leukocyte count to near normal values, a rigid schedule of treatment is not feasible. However, it has been recommended that 1 to 2 millicuries be administered intravenously on the first day and 0.5 to 1 millicuries on the third, sixth, tenth and fourteenth days. In patients with a high leukocyte count, it may be necessary to administer from 0.5 to 1.0 millicuries at weekly intervals until the white cells number approximately 30,000 per cubic millimeter. The use of large and concentrated doses may result in depression of erythropoiesis and platelet formation. Treatment with P^{32} does not produce radiation sickness or other subjective disturbances. In a series of patients with myeloid leukemia treated with P^{32} , Hall and Watkins have noted that in six of fifteen cases the terminal blood picture was that of acute leukemia. The possibility of radioactive phosphorous as a precipitating cause of an acute phase must be considered.

It has been demonstrated that chronic lymphatic leukemia does not respond as favorably to therapy with P^{32} as the myeloid form of the disease. Smaller doses of P^{32} are required to reduce the total leukocyte count in lymphatic leukemia.

General measures employed in the treatment of chronic leukemia include rest and an adequate diet. Restriction of activity is not necessary if weakness is not pronounced and the temperature is not elevated. Many of these patients are able to lead active and useful lives for many years. A high caloric diet, adequate in protein, is recommended. If the diet is well balanced, the need for supplementary vitamins is not great.

Blood Transfusions.—Occasionally blood transfusions are required to correct the progressive anemia which develops during the course of the chronic leukemias. Since liver and iron are not effective in improving the anemia of leukemia, it is necessary to use whole blood when there is excessive weakness, restlessness, dyspnea and hemorrhagic tendencies. Symptomatic improvement may follow transfusions especially when the erythrocyte count is below 2,000,000 and the hemoglobin

under 6 grams per 100 c.c. It may be necessary to give three or more transfusions (500 c.c.) to obtain the desired results.

Acute Leukemias

The treatment of acute leukemia with the folic acid antagonist has already been discussed. The course in most cases of acute leukemia is rapid, progressively downward, and usually fatal within three months. The treatment is essentially symptomatic with an attempt to make the patient comfortable. Because of the associated hemorrhagic tendencies, whole blood transfusions are of distinct value. Penicillin may be employed in controlling the secondary infection which is likely to accompany the ulcerative lesions in the oral cavity.

Lymphoblastoma

This group of diseases, the cause and nature of which are still unknown, include Hodgkin's disease, lymphosarcoma, reticulum cell sarcoma, lymphatic leukemia and mycosis fungoides. The treatment of lymphatic leukemia has been previously discussed. Satisfactory treatment for the lymphomas has not been found. For localized lesions in Hodgkin's disease, roentgen irradiation is the treatment of choice. There is general agreement that for patients with disseminated lesions the use of nitrogen mustard therapy with roentgen irradiation of selected specific areas appears to be the most effective method. According to some observers, when a patient is first seen presenting only one group of nodes involved, better results are secured if that group is resected and roentgen irradiation is given to the area postoperatively and also to other nodes in the adjacent regions.

The usual course of Hodgkin's disease, well managed by irradiation, is three to five years. In some instances it is shorter, while in the occasional case, palliation may be obtained for ten years or even longer. There comes a time when irradiation no longer causes regression of nodes and improvement in general condition. In the past general deterioration and eventually fatality ensued in these patients. Nitrogen mustard, which appears to act similarly to roentgen therapy, has proven of great value in some of these cases. An occasional patient with Hodgkin's disease may again become sensitive to roentgen ray treatment following nitrogen mustard therapy. Nitrogen mustard is also recommended for patients with Hodgkin's

disease in whom intensive roentgen ray therapy must be directed to the mediastinum, with consequent development of fibrosis of the lungs. This, of course, may be avoided by means of nitrogen mustard therapy. In general, the use of nitrogen mustard in Hodgkin's disease is indicated (1) when the lesions are generalized, (2) when the lesions, whether localized or generalized, are resistant to x-ray, and (3) in the presence of generalized symptoms such as fever, itching and neurological manifestations which are particularly amenable to chemotherapy.

Lymphosarcoma is best treated with roentgen rays. The response of giant follicular lymphoma to moderate doses of x-ray irradiation may be remarkable. All evidence of the disease may disappear and the patient may remain well for years. Craver believes that most of these cases, sooner or later, convert to reticulum cell sarcoma, becoming also less radiosensitive and more aggressive. The effect of nitrogen mustard in cases of generalized lymphosarcoma has been rather disappointing. Radioactive phosphorus, given intravenously in this disease as well as Hodgkin's disease, has produced disappointing results.

Mycosis fungoides has been treated with both roentgen rays and nitrogen mustard without any remarkable effect on the final course of the disease.

Polycythemia Vera

Radioactive phosphorus is perhaps the most effective means of treating polycythemia vera and producing prolonged remissions in this disease. This material has the advantage of never producing nausea or vomiting or any other ill effects when administered in therapeutic doses. Radioactive phosphorus emits a beta ray, has a half life of 14.3 days and localizes in a large measure in bone marrow and blood forming tissue. Radioactive phosphorus is usually administered as sodium acid phosphate and preferably intravenously since this eliminates the uncertainty of gastrointestinal absorption. From 3.5 to 7 millicuries is given initially. If at the end of from three to six months a hematologic and symptomatic remission has not been produced, a dose comparable to the initial dose or a fraction of it is given. When the symptoms are severe or the red blood

cell count is so high that complications of thrombosis are feared, 500 c.c. of blood are removed every other day until the hematocrit value has been reduced to approximately 40 per cent. Complete symptomatic and hematologic remissions of from six months to more than five years may be produced by this form of treatment. The complications of P^{32} are largely confined to severe leukopenia, thrombocytopenia and anemia resulting from overdosage or unusual sensitivity of the patient. It is well known that chronic leukemia, especially the myeloid type, occurs in about 10 per cent of all cases of polycythemia even though no irradiation or P^{32} is given. On the other hand, following P^{32} treatment, several patients with polycythemia vera have been reported terminating with acute leukemia.

The nitrogen mustards produced hematologic and symptomatic remissions of from six months to two and a half years. A dose of 0.1 mg. per kilogram given on four consecutive days may produce symptomatic relief within three weeks after treatment. Hematologic values are within normal limits in some cases by two months after treatment. The toxic reactions that may result from the administration of the nitrogen mustards are nausea, vomiting, leukopenia and thrombocytopenia. The nitrogen mustards have the advantage of easy administration and do not require any elaborate set-up. On the other hand, the use of P^{32} is limited to certain medical and research centers, entails special equipment and precautionary measures which are too expensive or not feasible for most hospitals. Irradiation has been used in the treatment of this disease for many years. Spray irradiation, total irradiation or treatment of the entire body has been introduced in more recent years and is now regarded as effective and well tolerated. Remissions of from six months to five years have been reported by the method of total body irradiation.

The use of arsenic (Fowler's solution) is a safe and reliable method of treating polycythemia. The serious objection to the use of Fowler's solution in polycythemia vera is, namely, the loss of appetite, nausea, and vomiting which so commonly occurs. This is usually followed by loss of weight and disagreeable gastrointestinal symptoms which cause the patient to turn against the drug.

ANESTHESIA FOR THORACIC PROCEDURES

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THROUGHOUT the history of medicine, medical endeavor has often been retarded through the lack of progress along one line. This has been particularly true of thoracic surgery. Prior to the advent of modern anesthesiology, thoracic procedures were largely confined to extrapleural operations and those procedures which could be carried out rapidly.

Within the last fifteen years anesthesiology has come into its just place in the field of medicine. New agents have been discovered, new methods of administration have been devised, and new techniques have been perfected for the administration of some of our older and better known anesthetic agents.

It is generally recognized that endotracheal anesthesia¹ has done much to promote successful thoracic surgery. By using this technique the anesthesiologist has complete control at all times. The collapsed lung may be inflated at will. Secretions may be satisfactorily removed by suctioning through the endotracheal tube. The apneic technique may be carried on at will, and a patent airway is always assured.

Adequate preoperative and postoperative care of the patient, the proper maintenance of blood and fluid levels, the introduction of the antibiotics and improvements in diagnosis and surgical techniques have placed thoracic surgery on the high plane it now occupies.

The successful conduction of anesthesia for the patient who is undergoing a thoracic surgical procedure frequently challenges the skill and judgment of the anesthesiologist. Thoracic operations are usually performed upon anemic, poor-risk patients with altered vital capacities and upon those suffering from pulmonary neoplasms, congenital cardiac anomalies, intrapleural tumors, and debilitating diseases such as tuberculosis, bronchiectasis and abscess. These preoperative conditions predispose to anoxia, circulatory disturbances and shock.

In excisional surgery of the lung and intrapleural tumors, and also for operations upon the heart, mediastinum and esophagus, the patient is subjected to the dangers of an open pneumo-

thorax, untoward vagal reflex stimuli, cardiac arrhythmias, and the dangers of suffocation from bronchial secretions, blood, and pus expressed from the already diseased lung during operation. The anesthesiologist must be adequately equipped to combat these conditions to insure a satisfactory course for the patient.

Patients with an open pneumothorax will usually maintain adequate respiratory exchange through the one intact lung. However, if respiratory exchange is inadequate, the respiratory movements must be supplemented by intermittent pressure upon the breathing bag on the gas machine. It is not advisable to leave the exposed lung collapsed for long periods of time because the atelectatic condition of the lung may be difficult to correct unless the lung is expanded periodically. Positive pressure up to 10 mm. mercury applied every twenty or thirty minutes will effectively correct the atelectatic condition.

Reflex stimuli which are at times instituted during a thoracic procedure may be the cause of death during an operation. There are several precautionary measures that can be taken to prevent these reflexes. Adequate premedication with atropine will depress the vagal reflex. It has been shown² that procaine will reduce the irritability of the myocardium and increases the threshold of stimuli necessary to produce fibrillation. The vagus nerve around the hilus of the lung may be injected with 1 per cent procaine. This effectively blocks vagal impulses and reduces the dangers of instituting a vago-vagal reflex which may lead to cardiac arrhythmias and death. Procaine may be administered intravenously to correct these cardiac irregularities. Ten cubic centimeters of a 1 per cent solution will frequently correct untoward cardiac stimuli and restore a normal rhythm. Some authorities³ administer procaine solution intravenously throughout the operation as a prophylactic measure. Sixty to 100 drops per minute of a 1 per cent solution will effectively control many of the dangerous reflex stimuli.

Excessive pulmonary secretion is frequently one of the most dangerous complications. This is especially true in patients suffering from tuberculosis, bronchiectasis, or lung abscess. Adequate

¹Read at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, June 10, 1949.

preoperative medication will lessen normal secretions. However, other measures must be instituted to control purulent secretions. Prolonged postural drainage preoperatively may be of advantage. Preoperative and postoperative suction bronchoscopy is one of the most effective means of controlling excessive secretions. During operation, secretions may be removed by passing the suction catheter through the endotracheal tube.

Selective endobronchial anesthesia has been used with some success. By employing this technique the infected lobes may be locked off, thus decreasing the danger of hypoxia.

There has been considerable controversy as to the best type of anesthesia for thoracic surgery. General anesthesia is favored by some surgeons, while others prefer spinal or local anesthesia. The advocates of the latter type of anesthesia feel that the conscious patient is better able to keep the bronchial tree free of secretions through an active cough reflex. However, there are disadvantages to this type of anesthesia. The patients will become restless and uncomfortable if forced to lie in one position for long periods of time unless heavily sedated. The heavy sedation will partially obliterate the cough reflex and thus defeat the purpose of regional anesthesia. Local anesthesia is most effective for thoracoplastics and extrapleural procedures.

A general anesthetic is usually the anesthetic of choice. Here the choice of anesthetic agent, and the technique of administration is relatively large. Ethylene, nitrous oxide, ether, pentothal and cyclopropane have been used and each with success. The agent used is apparently not as important as the skill with which it is administered.

Nitrous oxide and ethylene are relatively weak anesthetic agents. If these agents are chosen, the patient must be heavily sedated. Adequate sedation makes it possible to increase the oxygen concentration and reduce the dangers of anoxia. Ether and cyclopropane anesthesia for thoracic procedures have been enthusiastically accepted and condemned. Some authorities condemn ether anesthesia on the grounds that it is too irritating to infected pulmonary tissues. Others deny this accusation and are using it freely. Cyclopropane alone, or in combination with ether, is used extensively for thoracic surgery. Cyclopropane has been condemned on the grounds that it causes cardiac hyper-irritability and increases the danger of ventricular fibrillations. Some anesthesiologists

add ether to the cyclopropane on the theory that it reduces the incidence of fibrillation. The gaseous and volatile anesthetic agents are administered with adequate oxygen, employing the closed carbon dioxide absorption technique.

It has been our experience¹ that a mixture of pentothal sodium and curare in combination with 50 per cent nitrous oxide and oxygen is the best anesthetic agent for all types of thoracic surgery. The pentothal-curare solution is administered intravenously. The nitrous oxide and oxygen are administered by inhalation through an endotracheal tube. The pentothal curare solution contains 25 mg. pentothal and 5 u. d-tubocurarine chloride per cubic centimeter. This concentration has proven satisfactory for all ages and for all types of surgery. The non-explosive properties of this agent make the use of the electrosurgical unit possible.

By combining d-tubocurarine with pentothal sodium we have found that the amount of pentothal used is markedly reduced. The 50 per cent nitrous oxide provides a mild analgesia while the 50 per cent oxygen insures adequate oxygenation. The patient usually regains consciousness promptly following operation, thus decreasing the dangers of postoperative depression.

Since using this anesthetic agent we have encountered no fatal reflex stimuli or untoward cardiac irregularities, even though we have not used procaine routinely to reduce cardiac irritability. We administer this anesthetic to small babies undergoing cardiac operations as well as to older patients undergoing extensive pulmonary procedures.

Proper closure of the pleura and expansion of the atelectatic lobes will help insure a smooth postoperative course. If catheter drainage is to be carried out, the lobes may be inflated after the chest has been tightly closed and before the catheters have been clamped. The lobes are expanded by exerting positive pressure until the atelectatic condition has been corrected. The catheters are then connected to a Steadman pump. This pump will remove intrapleural secretions and also maintain a slight negative pressure, which will further promote adequate expansion of the intact lobes.

If catheter drainage is not contemplated, a catheter may be left in the pleural cavity through

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MANAGEMENT OF DISEASES OF THE THORAX

Surgical Aspects

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IT IS the purpose of this brief and general presentation to consider the present status of pulmonary resection in its various forms, with respect to the therapy of the commonest pulmonary diseases now known to be at least in some degree amenable to surgical treatment.

To have a proper perspective on resectional therapy it is well to remember that this type of operation is of recent development. Sporadic attempts at partial lung removal had been made in the last part of the nineteenth century, and a very rare clinical success with partial lobectomy had been recorded, notably by Tuffier in the 1890's. The first groups of lobectomies with any significant attending success were reported by Brunn⁵ in 1929, and Shennstone and Janes¹⁸ in 1932. Brunn reported six cases with one death, and Shennstone fifteen cases with three deaths. These were principally cases of bronchiectasis and were done by a technique involving mass transfixion-ligature of the hilus and a resultant only partial amputation of the involved areas. The operation of total pneumonectomy remained an unsolved and uniformly lethal procedure until 1933 when Graham⁹ reported a successful case for primary lung cancer. It is of interest to note that this first patient was a physician himself, and he has since led an active professional career. In the following year Cameron, Haight¹¹ reported a total left lung removal for bronchiectasis with a living patient as the end result. These cases were a strong impetus to further efforts in many clinics, which eventuated in the fairly well standardized techniques of the present day.

Certain technical problems are common to all types of pulmonary resection which include total pneumonectomy, bilobectomy through the intermediate bronchus, total lobectomy, partial lobectomy and segmental resections. These common problems are concerned with (1) anesthesia, (2) the anatomy and dissection of the vascular structures in the hilus, (3) the method of closure and healing of the bronchial stump, (4) the prevention of empyema, (5) the prevention of bron-

chogenic infectious spreads (postoperative pneumonia), and (6) the prevention of surgical shock.

Anesthesia.—It is evident that the challenge of open-chest surgery has been the greatest impetus to the development of modern anesthesia and the anesthesiologist. The popularization of endotracheal anesthesia, as proposed and practiced experimentally by Meltzer, has been the principal factor in a safe open-chest technique. This permits an adequate airway in most positions, satisfactory aspiratory removal of blood and secretions, controlled reinflation of the lungs during and after resection, and adequate oxygenation in the pulmonary capillaries during operation. The choice of anesthetic agent is next in importance. It should preferably be an agent capable of inducing satisfactory anesthesia levels at a high oxygen concentration, and for this objective cyclopropane- and ether-oxygen are the most satisfactory. Of the two, ether provides the greater margin of safety, relatively less lability of anesthesia level, and a lesser disturbance in cardiac function. In our own clinic we carry out induction with cyclopropane or pentothal, followed by oxygen-ether, using a closed circuit rebreathing technique.

Anatomical Dissection.—As stated previously, the earliest resections were executed by a relatively crude mass-ligation technique which was relatively easy and immediately effective, but was associated with a high incidence of bronchial fistula and resultant empyema, as the strangulated tissues of the hilus usually sloughed out in the first week after operation. The classical contributions of Churchill,⁶ Blades and Kent,² and Rein-hoff,¹⁷ among others, on the vascular anatomy of the pulmonary hilus permitted about 1940-42 a general shift to a precise anatomical dissection in the hilus with seriatim isolation and ligature of the arterial and venous branches as required. Churchill and Belsey,⁷ Brock,⁴ Boyden³ and others pointed the way to conservative resection of pulmonary segments. The concept of the pulmonary segment rather than the entire lobe, as an anatomical and surgical pathological unit thus

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developed rapidly in the course of a half-dozen years.

Closure of the Bronchial Stump.—Whether in total pneumonectomy or lesser operations, this has evolved to a considerable but not entirely satisfactory degree. It is now generally considered that a clean sharp transection of the bronchus without proximal crushing or clamping and with an end closure using a single layer of simple non-absorbable sutures (silk, cotton or wire) is the best. A further support of the closure by re-pleurization of the hilus, or a pedicle of pleura-lung to the stump, is an additional safeguard against failure due to tissue breakdown and fistula formation.

Prevention of Empyema.—Postoperative empyema is usually the result of a fistula in the bronchial stump, and not of direct contamination at the time of dissection. The incidence of fistula and empyema go hand in hand, as shown by Table I. The situation is quite comparable with the threat of peritonitis after intestinal resection, where a secure anastomosis usually means a clean peritoneum and steady recovery. Only rarely does a postoperative pleural effusion or hemothorax result in a clinical empyema requiring drainage, in the absence of a demonstrable bronchial fistula.

Prevention of Postoperative Pneumonia.—This is not usually a problem in tumor cases but is of great importance in bronchiectasis and chronic abscess, where highly infected purulent sputum may be retained in large amounts throughout the involved segments. In 130 consecutive resections of various types for bronchiectasis in our clinic (1938 to 1949) there were four hospital fatalities (3.1 per cent). Two of these deaths were due to contralateral bronchopneumonia, and were suffered before 1944 when penicillin became available for civilian hospital use. There are other factors than chemotherapy which promote safety by minimizing postoperative pneumonitic spreads. These are perfect anesthesia, meticulous pre-operative preparation including postural drainage and bronchoscopy, and pre-operative dental prophylaxis. The importance of the latter factor is not to be underestimated.

The other disease in which bronchial contamination during operation becomes all important is tuberculosis. Beyond the factors mentioned

TABLE I

Technique	Operations	Broncho-pleural Fistula	Empyema
Mass Ligation	22	12 (54.5%)	11 (50.0%)
Individual Dissection.....	63	10 (15.9%)	11 (17.4%)

above, streptomycin therapy is proving to be of some protective value against immediate reactivation or spread of disease.

Prevention of Surgical Shock Due to Blood Loss.—Accidental opening of a large pulmonary vessel in the course of dissection is not as frequent an accident as might be expected from the anatomical situation. A much more usual source of significant blood loss during operation is the exceedingly rich collateral circulation present in adhesions on the chest wall, diaphragm, and mediastinum as a result of chronic pulmonary disease and the attendant pleuritis. It has been shown by Wood and Miller,¹⁰ and again by my colleagues, Liebow and Hales,¹² that vascular anastomoses exist between bronchial and pulmonary vessels to a significant degree in chronic pulmonary disease. Determinations of blood loss by colorimetric or weighing techniques (of aspirated material in suction bottles and on gauze sponges or drapes) according to Baronofsky¹ have demonstrated that there may be a blood loss of 1400 c.c. in an average pneumonectomy or lobectomy. The importance of typed transfusable blood in reserve for these cases is thus made obvious. The use of hemostatic oxycel gauze and gelfoam for large denuded areas of dissection should also be mentioned as useful.

We shall now proceed to consider how attention to the various above-related factors has resulted in improvement of the results in the surgical treatment of bronchogenic carcinoma, bronchiectasis, pulmonary abscess, and tuberculosis, using as an example the case experience from the thoracic surgical service of the New Haven Hospital, where this work has been in progress since 1937-38.

Pulmonary Resection for Bronchiectasis

The development of resectional therapy for bronchiectasis is one of the brightest chapters in modern surgery. This procedure offers a chance for cure or great clinical improvement with social and economic rehabilitation to a majority of bronchiectatic sufferers.

Bronchiectasis is more often than not a disease

of multiple segments or lobes. From the standpoint of anatomical distribution our cases divide themselves roughly into thirds. In one-third the disease is confined to a single lobe or a lobular segment; in another third, the disease is multilobar but still unilateral; in the remaining third, both lungs are involved in a varying degree. In the last group, a bilateral program of surgery is feasible providing the upper lobes (excepting the left upper lobe lingula) are essentially uninvolved. The operations are spaced three months to one year apart when bilateral resections are required.

Before an operation is undertaken for the relief of bronchiectasis, an accurate and complete mapping of the bronchial disease by lipiodol bronchographic technique is required. Failure to recognize and remove all areas of disease invites an incomplete therapeutic result or failure. The lower lobes are most commonly involved, particularly the left lower. Two-thirds of the patients with left lower lobe disease have simultaneous bronchiectasis in the lingula of the left upper lobe, and about one-third to one-half of the patients with right lower lobe disease have associated involvement in the middle lobe.

In 1947 we reviewed our series of surgically treated bronchiectasis. There were then seventy-five patients, the ages of whom ranged up to forty-nine years. Ten of them had bilateral lobectomies, a total of eighty-five operations. The hospital postoperative mortalities were three (3.5 per cent). (Case mortality was 4 per cent.) Since 1947 there have been forty-five additional cases with one death; insufficient time has elapsed to classify the results in these cases.

The end results of the first seventy-five have been very encouraging. There have been no subsequent deaths in the series. Complete cure with absence of all symptoms resulted in thirty-five; a near cure with occasional mild cough and scanty, not measurable sputum resulted in seventeen cases. Altogether, fifty-two (70 per cent) were in these favorable categories. An additional fourteen (19 per cent) considered themselves greatly improved but had residual cough and sputum. Only one case was a complete therapeutic failure, in addition to the three deaths noted above. One of the deaths was due to avoidable respiratory obstruction at operation; two were due to spreading pneumonia in the opposite lung. There has been only one death since 1944 when penicillin became available for civilian use. The surviving

patients are actively employed or working at home or studying. Several of the women have subsequently married and have had successful pregnancies. Symptoms of respiratory insufficiency have not been noted in unilateral cases, but several patients with bilateral involvement have dyspnea on exertion.

Resection for Chronic Lung Abscess

During our early experience with the treatment of lung abscess¹⁵ (up to 1943) it became increasingly evident that acute and chronic abscess represented different therapeutic problems with respect to morbidity, mortality and late results. The conservative medical procedures and simple drainage operations which are so effective in the acute cases (that is, those with symptomatic duration of one to ten or twelve weeks) were found on systematic case analysis to be relatively ineffective and sometimes dangerous in the management of more chronic lesions (those of several months to years in duration).

Among twenty-two acute patients treated by bronchoscopy, postural drainage, sulfonamide chemotherapy (the only available at that time), and simple pneumonotomy, there was a single death, a mortality of 4.5 per cent. Twenty had excellent end results as indicated by relief of cough and sputum, with clearing of the x-ray findings. Among twenty-five patients with chronic lesions, the results were quite the reverse after simple drainage—a high mortality (seven deaths or 28 per cent) and eight patients with persistent cough, sputum, recurrent febrile attacks, bronchocutaneous fistula, and failure of x-ray clearing. Six of these patients required secondary lobar resections for cure. The reasons for this divergence in results between acute and chronic cases is to be found in the secondary pathologic changes which develop in the chronically abscessed lung lobe, and in a progressive deterioration of the chronic patient's general condition due to sepsis.

The local complications of chronic pulmonary abscess are: (1) bronchiectasis, (2) bronchostenosis, (3) organizing pneumonia and fibroelectasis, (4) multiple secondary abscess formation, (5) perforation and empyema, (6) hemorrhage. Simple drainage could not be expected to deal with these entirely, and it seemed wiser to substitute primary lobar or pulmonary resections in chronic cases as the situation required. After

preliminary bronchoscopy for diagnostic help in ruling out cancer, foreign body, et cetera, and after a lipiodol bronchogram to delineate the extent of secondary changes, twenty-four resections were carried out (fourteen primary, ten secondary). The early and late results have justified this departure toward radical treatment. The mortality was lower (three or 12.5 per cent) and the results improved (eighteen of the twenty-four patients well). Since the advent of penicillin in 1945 results have been even better. Expert anesthesia is a prerequisite, since the possibilities of bronchial contamination and obstructive anoxia are greater than in the usual cases of bronchiectasis and tumor. The literature of the past three years indicates that this apparently radical attitude is steadily gaining acceptance, although originally rejected by some thoracic surgeons as not sufficiently conservative.

The existence of a limited (encapsulated) interlobar or parietal empyema is not necessarily a contraindication to one-stage resection of the abscessed area. After evacuation of the local empyema at the time of thoracotomy, we have in six instances proceeded with removal of the original lobar disease quite successfully. These cases may require prolonged drainage of the residual pleural space, and it is quite obvious that only the protection afforded by penicillin and other chemotherapeutic agents makes this a feasible procedure.

It is well to emphasize here the not uncommon association of abscess with carcinoma in the age group forty-five and over. It may be occasionally difficult or impossible to entirely differentiate the two diseases by x-ray or bronchoscopy, which is another important reason for considering resection rather than drainage in the chronic cases.

Resection for Bronchogenic Carcinoma

After the first successful pneumonectomy for bronchogenic carcinoma was performed by Evarts Graham in 1933, intensive study by Rienhoff,¹⁷ Churchill,⁶ Crafoord⁸ and others resulted in rapid technical advances. After 1938, reports of substantially large case series began to appear in the American and English literature. In 1947 Ochsner and DeBakey¹⁶ were able to collect 2,034 cases from twelve different clinics, with an exploration rate of 29.2 per cent and a resection rate of 13.4 per cent.

It rapidly became evident to workers in this

field that the limiting factors in the surgical treatment of pulmonary cancer were not technical but clinico-pathological. From one-half to two-thirds of patients are now appearing for treatment in an advanced inoperable state which precludes even an exploratory thoracotomy. The objective findings leading to this conclusion are usually as follows:

1. A positive biopsy from supraclavicular or axillary nodes.
2. Pleural effusion, especially when positive for cancer cells.
3. Skeletal or visceral metastases.

The bones usually involved in metastatic lung cancer are the thoraco-lumbar vertebrae, pelvic bones, upper femur, skull, ribs, and humerus.

This distribution is not dissimilar to that observed in breast cancer.

The viscera chiefly providing sites for metastases are the contralateral lung, liver, brain, kidneys, adrenals and skin.

4. Mediastinal extension, as evidenced by involvement of the recurrent nerve producing laryngeal cord paralysis and usually hoarseness, of the sympathetic chain producing a Horner's syndrome, or of the phrenic nerve causing paralysis of a hemi-diaphragm. Involvement of the superior vena cava may produce x-ray signs of mediastinal widening, as well as distended neck or arm veins with edema.

5. Bronchoscopic evidence of proximal extension to involve the trachea or carina. An important observation by Griess, McDonald and Clagett in 1945¹⁰ showed that microscopic tumor invasion in the bronchial wall extended proximally on the average 2.5 cm. beyond the grossly visible lesion.

When a series of bronchogenic cancer patients has been screened by these criteria of inoperability, only 40 to 50 per cent will be left for serious surgical consideration. Of this group, a substantial fraction (about one-half) will be found at subsequent exploration to be incurable because of mediastinal invasion at the hilus, pleural and pericardial extension, remote lymph node involvement, and extension into the large veins. Yet it has been our practice to carry out palliative resection (i.e., without hope of cure) in as many of these as can be accomplished without transecting tumor in the bronchial stump. It appears that removal of a grossly infected, sometimes

bleeding and pain-producing lung as a palliative procedure has a great deal to recommend it. The surviving patients are usually symptomatically improved, and the average life span in this group is higher than in the untreated inoperable case.

Our first New Haven Hospital group of 100 cases began in 1938 and was complete in December, 1943.¹³ The second hundred was on record by June, 1947,¹⁴ and the third hundred by March, 1949. Comparing the three series, it is apparent that the exploration rate has risen from 32 to 47 per cent, and the resection rate from 12 to 30 per cent. This is in part due to a better case referral from medical and surgical colleagues in the State of Connecticut and in part to an increased willingness to attempt palliative resections where cure seems impossible. However, the line demarcating palliative and curative resections is sometimes hard to define. Our two longest post-resection survivors (now nine and seven years) were in a sense palliative resections. The first had a localized invasion of the chest wall which required extrapleural resection. The second had a complicating pneumococcal empyema at the time of admission, which fortunately was controlled with sulfathiazole, leading to a per primam healing of the postoperative chest and incision.

The operative mortalities in the three series were 25, 14, and 17 per cent, respectively; for the entire group of 300 cases, 17.4 per cent. It is probable that the increasing resection rate has led us to include poorer risks and technically more difficult cases. The usual causes of post-pneumonectomy death have been bronchial fistula and empyema, right heart failure and pulmonary edema; no patient has died of hemorrhage during or after operation.

Resection for Tuberculosis

From 1936, to date, our service has completed thirty resections for tuberculosis. These include seven lobectomies, two bilobectomies and twenty-one pneumonectomies. Fourteen patients were male, and sixteen female. They ranged in age up to seventy years, but the majority were in the fourth decade.

The therapeutic indications were as follows:

Thoracoplasty failures	9
Bronchostenosis of primary bronchus	7
Tuberculosis bronchiectasis	5
Tuberculoma and cancer suspects.....	4
Tension cavity	3
Miscellaneous	2

There have been no postoperative hospital deaths in this series. Two have subsequently died of complications, both due to tuberculosis spread, one with bronchial fistula and empyema.

There have been four instances of bronchopleural fistula (13.3 per cent). Of these patients, three developed empyema (10 per cent), one of whom, as already stated, died. There were four instances of contralateral spread of disease or reactivation (13.3 per cent). Three had wound complications which are now healed. Some of the above complications were multiple in the same patients.

As to end results, two patients previously mentioned are dead, and twenty-eight are living. Three are too recently operated upon to evaluate. Of the twenty-five sufficiently long-term survivors, twenty-two appear to be doing well (88 per cent). Seven of these are working; fifteen are at home or convalescing in a sanatorium with variable degrees of physical activity and negative sputum, but not all have had gastric concentrates and cultures.

These results are promising, perhaps due to case selection, and probably because streptomycin was used in the postoperative course of twenty-one patients. This drug was given for thirteen to nineteen days after operation, at levels of 1.0 to 2.0 grams daily. The most favorable group according to indications for operation has been that of post-thoracoplasty persistent cavity with positive sputum; the next most favorable, tuberculous bronchiectasis and the resections for tuberculoma. The poorest results were expected and obtained in the patients with tension cavity and unstable recent spreads with highly positive sputum. Our experience suggests strongly that resection is not sufficiently safe to be considered as a substitute for a well-conducted thoracoplasty when the usual indications for the latter operation exists.

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POSTOPERATIVE MANAGEMENT FOLLOWING SURGERY OF MALIGNANCIES OF THE LARGE BOWEL

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A DECADE ago most large clinics reported mortality rates in the vicinity of 20 per cent following resection of the rectum and colon. Today, the same groups report an incidence of 5 per cent or less. Undoubtedly the employment of chemotherapeutic measures together with improvements in anesthesia and surgical techniques have contributed to this encouraging reduction in postoperative mortality rate. Reduction in postoperative morbidity also is an achievement that may be largely credited to the use of antibiotics, intestinal antiseptics and to refinements in postoperative care. According to Clute and Kenny,⁵ it is becoming increasingly apparent that many factors other than chemotherapy are responsible for the progress in surgical management. It is obvious that improvement in all phases of preoperative and postoperative care have contributed in no small part to diminishing postoperative deaths and morbidity following the extirpation of malignancies involving the rectum and colon. This has made it possible to bring surgery to older age groups. At the present time, resection of malignant lesions in the seventh and later decades of life with subsequent satisfactory recoveries is not at all uncommon. In our department, during the past year, the average postoperative stay for patients submitted to resections for malignant lesions of the colon was ten days. This represents a marked reduction in morbidity as compared to similar resections performed five years prior to this report.

It is our purpose to discuss a few of the important adjuncts to postoperative care that have contributed materially to the decreased postoperative mortality and morbidity rates, and which consequently are a part of the regimen followed on our service.

Oxygen Therapy

It would be an error to imply that extirpation of malignant lesions of the colon and rectum, particularly the latter, whether by the Miles type of operation, abdominoperineal proctosigmoidec-

tomy or low end-to-end anastomosis, does not fall within the category of surgically traumatic and often shock-producing procedures. Mindful of this fact, we are particularly staunch advocates of adequate supportive measures to prevent peripheral vascular collapse in the immediate postoperative period. The ability to administer practically 100 per cent oxygen in the inspired air via the BLB mask, economically, efficiently and without discomfort to the patient, has established this measure as a routine in our postoperative regimen.

Boothby, Mayo and Lovelace⁸ have advocated the use of 100 per cent oxygen as a prophylactic measure against shock in the immediate postoperative period, and they stress the fact that oxygen therapy should not be instituted exclusively where shock has developed. They point out that the oxygen saturation of arterial blood can be increased from 10 to 15 per cent by the administration of 100 per cent oxygen, and although this increased oxygenation apparently is small, it is important in states of diminished blood pressure since it does produce increased partial pressure of oxygen in the capillaries.

The blood as it passes through the capillaries gives up only about 40 per cent of its load of oxygen to the tissues under normal circulatory conditions. The venous blood, therefore, is still 60 per cent saturated, and the partial pressure of oxygen in the capillaries is equivalent to approximately 33 mm. Hg. If for any reason the rate of circulation is decreased, as occurs in states of shock; for example, the blood may liberate 80 per cent or more of its load of oxygen to the tissues. The capillary partial pressure of oxygen will fall from a normal of about 35 mm. to 14 mm. Hg. In such a case, on the basis of the characteristic dissociation of oxyhemoglobin, the inspiration of 100 per cent oxygen could be expected to increase the amount of oxygen available to tissues as much as 50 per cent.

Experimentally, Blalock and his associates² have confirmed the prevailing impression that the inhalation of high concentrations of oxygen exerts beneficial effects in the treatment of peripheral circulatory failure. They showed that a

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considerable increase in oxygen was available to the tissues, as evidenced by a rise in oxygen saturation of arterial blood throughout the body. They further concluded that oxygen availability was further enhanced by a concomitant increase in carbon dioxide tension.

Many investigators have reported the occurrence of irritation, congestion and even edema of the lungs in animals breathing high concentrations of oxygen for prolonged periods of time. In their studies, Comroe and his associates⁹ noted substernal distress in 82 per cent of the normal males receiving 100 per cent oxygen for twenty-four hour periods. They also observed that signs of nose and throat irritations were common and concluded that the objectionable symptoms were due to a tracheobronchitis. They suggested that if oxygen therapy must be continued beyond a twelve-hour period, the concentration should be decreased 50 to 60 per cent, unless that concentration is insufficient to oxygenate the arterial blood, since arterial oxygen unsaturation represents more of a threat to the patient's life than does the possibility of a tracheobronchitis.

On the other hand, Boothby³ and Evans,¹⁴ respectively, report series of over 800 clinical patients who received 100 per cent oxygen for forty-eight-hour periods with no untoward effects. We have used 100 per cent oxygen postoperatively for twelve to sixteen hours in over 500 patients. No undesirable effects were observed, and we recommend its use most highly as an adjunct in the prophylaxis against shock in the immediate postoperative period following resections of the rectum and colon. We feel that blood pressure and pulse are stabilized much more rapidly with the prophylactic use of high concentrations of oxygen.

Our incidence of postoperative atelectasis has been small since we have been administering 100 per cent oxygen via the BLB mask. We also feel that our incidence of postoperative ileus has been reduced. However, it is impossible to state definitely whether or not the administration of 100 per cent oxygen together with the use of gastric suction in the immediate postoperative period has been the contributing factor. Fine¹⁵ and his co-workers have shown conclusively that the administration of high concentrations of oxygen accelerates the decompression of bowel obstructions along with intestinal intubation since it facilitates the more rapid removal of nitrogen

from the obstructed bowel. In the event of postoperative pulmonary complications, such as atelectasis, bronchopneumonia, lobar pneumonia or pulmonary edema, high-concentration oxygen therapy is instituted at once and continued for at least twenty-four to forty-eight hours as indicated.

Since there is still considerable disagreement among authorities^{3,4,11,14} as to the best method by which high concentrations of oxygen may be administered most efficiently and with the least discomfort to the patient, the oxygen saturation of arterial blood was studied by one of us (L.F.S.) pre-operatively and postoperatively in a group of sixteen patients submitted to resection for malignant lesions of the rectum and colon. These patients were studied with a view to evaluating the oxygen saturation of the arterial blood in the immediate postoperative period under practical rather than ideal conditions. The pre-operative studies were made on samples of blood from the femoral artery after sedation, upon arrival of the patients in the operating room and just before administration of the spinal anesthetic. Blood samples were again taken postoperatively from the femoral artery following oxygen therapy for twelve to fourteen hours.

These patients were divided into two groups of eight each. One group received the oxygen by intranasal catheter and the other group via BLB mask at a constant rate of 7 liters per minute. In the group receiving oxygen by catheter, the catheters were replaced every four hours to rule out stoppage. The BLB masks were removed only momentarily during the twelve- to fourteen-hour periods to permit wiping of the patient's face, with the exception of the fourth patient in Table II, from whom the mask was removed for an hour because of our inability to replace an empty oxygen tank. All patients had Levin tubes emerging from beneath their BLB masks which gave a possible point of oxygen leakage.

These patients were under heavy sedation during the immediate postoperative period, and no particular complaints were registered concerning either method of administering oxygen. Oxygen has been administered postoperatively with the BLB mask to approximately 500 patients on the proctology service, and no appreciable discomfort has been noted as has been recorded with normal subjects in experimental trials.

Method.—The oxygen content and capacity of the arterial blood samples were determined by the

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Van Slyke and Neill manometric method. All samples were subjected to dual tests to check the accuracy of the determinations.*

A significant effect of pre-operative medication is noted in the reduced oxygen saturation of arterial blood reported in the control series (Tables I and II). Oxygen saturation was determined in

minister oxygen by the most efficient route, namely, by use of the BLB mask.

Fluids and Electrolytes

During the past two decades much effort has been expended in attempts to place the diagnosis and treatment of dehydration on an arithmetical

TABLE I. OXYGEN SATURATION OF ARTERIAL BLOOD: INTRANASAL OXYGEN

CONTROL (PREOPERATIVE)			14-16 HOURS POSTOPERATIVE		
Oxygen Content*	Oxygen Capacity*	Per Cent Saturation	Oxygen Content*	Oxygen Capacity*	Per Cent Saturation
1. 16.35	21.77	75.1	16.57	21.18	78.2
2. 15.01	19.93	75.3	17.13	21.03	81.45
3. 18.33	22.07	83.05	17.36	22.97	75.6
4. 14.12	19.26	73.3	16.30	20.16	80.8
5. 17.12	21.63	79.1	15.89	20.35	78.1
6. 16.26	20.22	80.4	18.13	22.35	81.8
7. 15.58	19.28	80.8	16.41	19.42	84.5
8. 15.65	21.51	72.7	18.05	20.92	86.3

*Volumes per cent.

TABLE II. OXYGEN SATURATION OF ARTERIAL BLOOD: OXYGEN VIA BLB MASK

CONTROL (PREOPERATIVE)			14-16 HOURS POSTOPERATIVE		
Oxygen Content*	Oxygen Capacity*	Per Cent Saturation	Oxygen Content*	Oxygen Capacity*	Per Cent Saturation
1. 17.49	19.93	87.70	19.56	19.23	100
2. 17.65	21.33	82.70	17.95	18.18	98.70
3. 15.22	20.66	73.70	19.23	20.56	93.50
4. 13.74	16.09	85.40	15.29	16.71	91.50
5. 17.44	22.67	77.00	19.37	19.61	98.80
6. 13.54	16.27	80.30	16.36	16.70	97.90
7. 14.42	16.70	83.40	16.95	16.88	100.00
8. 15.49	17.66	87.70	19.35	19.89	97.30

*Volumes per cent.

a number of these patients the day before operation when the patients were not subjected to the effects of hypnotics and analgesics. Oxygen levels at that time ranged within normal levels of 92 to 95 volumes per cent saturation. This would indicate that a considerable degree of oxygen unsaturation might also exist in the immediate post-operative period where hypnotics and analgesics are used, and at a time when increased or at least normal oxygen saturation is desired (Tables I and II).

A relatively small number of patients have been studied thus far, but from the figures cited for Tables I and II, postoperative oxygen saturation, a definite trend is noted.

Obviously much higher oxygen saturation can be obtained in the immediate postoperative period by the use of the BLB mask than by administering oxygen via nasal catheter. Since it is during this period of a patient's convalescence that an increased oxygen saturation of arterial blood is most desirable, as has been previously pointed out, it would seem only plausible to ad-

basis as Coller,⁶ Moyer²⁰ and others have testified. All methods suggested have been based on the mistaken assumption that the various blood solutes (sodium chloride and plasma proteins) and the suspended particle (red blood cells) volumes were approximate constants. In spite of the increased emphasis placed on laboratory methods for controlling water balance, there are no universally applicable or dependable laboratory procedures or formulas available for the detection and treatment of fluid disequilibrium. Therefore, a clinical approach appears to be more generally applicable to the problem.

Since in the postoperative period our resection patients are subjected to continuous intestinal decompression for periods usually of two to three days, they receive, during this interval, fluids and nutrients by the parenteral route. Schedule I (next page) is a representative excerpt from our postoperative fluid regimen which is used as a guide by residents and interns.

Explanation of Schedule I.—

1. Oral intake is limited in an attempt to prevent excessive lavaging of gastric secretions while the

*Oxygen saturation measurements were made in the Department of Physiology, Temple University Medical School, by E. M. Greisheimer, Ph.D., M.D., and D. Ellis, B.A.

SCHEDULE I

Fluid intake 2500 to 4000 c.c. daily by parenteral route until these volumes can be taken orally. Requirement determined by skin turgor, perspiration, comparison pre-operative and postoperative blood studies, urinary output, loss by vaporization, Wangenstein suction, Babcock sump drain.

Example

1. Oral intake limited to maximum of 1000 c.c. H₂O or Ringer's solution, preferred with gastric suction working twenty-four hours.
2. Five per cent glucose in normal saline administered to equal volume aspirated via Wangenstein suction and sump drain, plus estimated salt loss by perspiration.
3. Five per cent glucose in distilled water administered to equal volume urine output (800 to 1000 c.c. minimum desired, and anticipated on first postoperative day), plus estimated water loss by vaporization (1000 c.c. minimum).
4. Daily protein requirements fulfilled by supplementing fluids with (1 gm./kg. body weight) protein hydrolysates such as parenamine or amigen.
5. Whole blood in small transfusions (250 c.c.) if indicated by red blood cell count and hematocrit.

Wangenstein suction is functioning and to eliminate the tendency to alkalosis.

2. As Coller^{7,8} has suggested, we limit, or refrain from using, parenteral salt solutions in the immediate (twenty-four hours) postoperative period. It has been found that by doing so the blood chloride levels suffer only moderately, and the daily urinary output is of more adequate volume. With this regimen, oliguria has been observed rarely. The volume for volume of gastric drainage plus the volume lost via the Babcock sump drains, when they are used, is replaced with normal saline solution. Additional saline is administered when perspiration is excessive.

3. A minimum of 1000 c.c. of 5 per cent glucose in distilled water is administered in the immediate postoperative period to promote an adequate urinary output. The daily urine volume is then replaced, volume for volume, with 5 per cent glucose in distilled water, plus the estimated water lost by evaporation, which is considered to be a minimum of 1000 c.c.

Wangenstein has suggested that a minimum excretion of 700 c.c. of urine is essential in the postoperative patient. Fluids are always administered with greatest care as to volume and rate of administration to patients in the older age groups and to those with possible myocardial damage.

Lockhart and Elman¹⁹ recently demonstrated

that the proper rate at which intravenous glucose solutions may be injected without producing glycosuria and unwanted diuresis is considerably slower than that which was previously suggested and supported by the work of Woodyatt. They showed that glucose solutions injected at rates less than 0.5 gm per kilogram of body weight per hour produced no glycosuria, while faster rates of injection produced glycosuria and diuresis. In other words, a liter of 5 per cent glucose solution should require one hour and twenty-five minutes if glycosuria and the associated diuretic effect is to be avoided. They also pointed out that amino acids injected in conjunction with glucose effectively reduced the degree of glycosuria as compared with glucose alone injected at the same rate. They believe that amino acids act by increasing the utilization of glucose in the tissues rather than by lowering the renal threshold for glucose excretion.

Protein Balance

Protein has a special significance in surgical patients because of the fact that injury and operation lead to tremendous protein loss. Even the phenomenon of surgical shock is concerned with the lack of sufficient circulating plasma protein to maintain normal fluid relationship. Jones and Eaton,¹⁷ 1933, first reported that edema resulting from hypoproteinemia was not uncommon in patients before and after operations for gastrointestinal lesions, and emphasized that the administration of large amounts of sodium chloride intensified the edema. Since then the literature has become voluminous in descriptions of the effects of hypoproteinemia on the postoperative patient.

Ravdin,²² as well as other workers, has shown experimentally and clinically that wound healing is delayed and inadequate where hypoproteinemia exists. Hartzell and his associates¹⁶ found hypoproteinemia to be present more frequently than vitamin C deficiencies in patients with wound dehiscence. Mulholland²¹ and co-workers demonstrated the amazing rate of healing of decubitus ulcers when the therapeutic regimen is unchanged except for an increased protein intake. Whipple²⁴ advocated the correction of existing anemias in protein-deficient surgical patients, to avoid further degrees of anemia.

Every operation, injury and infection is associated with a period of increased nitrogen catabo-

lism resulting in most instances in a negative nitrogen balance. Culbertson¹⁰ found that approximately 25 gm. of nitrogen were lost per day following major surgical procedures. Under normal conditions, protein nutrition in the adult is maintained by the intake of an adequate, well-balanced diet containing among other things about 1 gm. of protein per kilogram of body weight per day.

Koop and associates¹⁸ found that it was necessary to provide a nitrogen intake of 0.30 gm. per kilogram of body weight and a caloric intake of 30 calories per kilogram of body weight to maintain nitrogen balance in the immediate postoperative period following gastrectomies and cranial operations. Elman¹³ states that some postoperative patients will have protein requirements as high as 300 to 400 gm. per day, but recommends the routine administration of 100 gm. of hydrolyzed protein and 100 gm. of carbohydrate parenterally in the immediate postoperative period to those patients who cannot take oral feedings.

Koop has also provided good evidence that forced feeding prior to operation is of real value because considerable nitrogen can be stored and drawn on in the immediate postoperative period. It is our policy to admit patients to our service five to seven days prior to operation. During this period they receive a high protein (120 gm.), high carbohydrate (400 gm.), and low residue diet with supplemental feedings of protein concentrate, or hydrolysate such as essenamine or delcos granules, so that on an average of 3 gm. of protein per kilogram of body weight are ingested daily.

Postoperatively we provide all resected patients with a minimum of 1 gm. of protein hydrolysate (parenamine or amigen) per kilogram of body weight daily by the intravenous route until proteins can be taken by mouth in adequate amounts. Some patients, particularly those subjected to the Miles resection, require a greater protein intake, apparently because of the large volume of serous drainage from their perineal wounds. In the immediate postoperative period daily serum protein studies are performed along with frequent hemoglobin and hematocrit determinations. These studies indicate that the regimen described above usually is adequate to maintain plasma protein levels within normal limits. Protein concentrates by mouth are started the day after oral feedings are begun. Anemias are corrected by frequent small transfusions.

Intestinal Antiseptics and Antibiotics

As has been mentioned above, candidates for resection of malignant lesions of the colon and rectum are admitted to the hospital five to seven days prior to operation at which time the oral administration of intestinal antiseptics is instituted. All patients receive sulfathalidine 0.1 gm. per kilogram of body weight during each twenty-four-hour period for a minimum of five days. The drug is administered in suspension to enhance its effectiveness. Forty-eight hours prior to intubation with the Levin tube (four hours before operation), oral streptomycin is started, 2 gm. being administered in each twenty-four hour period in divided doses every four hours.

The senior author and Rowe²³ have demonstrated with coliform counts that the combination of sulfathalidine and streptomycin produces the most efficient degree of intestinal antiseptics and have pointed out that the risk of producing resistant organisms is thereby minimized. The oral administration of sulfathalidine is again instituted postoperatively the day after oral feedings are resumed, according to the preoperative dosage schedule. The postoperative use of sulfathalidine is particularly recommended in those patients submitted to abdominoperineal proctosigmoidectomy with preservation of the sphincter muscles, or where open perineal wounds may exist in the presence of fecal contamination.

Postoperatively, penicillin is administered prophylactically for five to seven days. We subscribe to the infrequent dosage schedules for aqueous penicillin as have been recommended by Zubrod²⁶ and others.²⁵ These workers have demonstrated that the bacteriostatic effects of aqueous penicillin outlast the measurable blood levels by many hours, and recommend that doses of 300,000 units of aqueous penicillin intramuscularly every twelve hours offer a more rational method of controlling penicillin-susceptible infections than by maintaining blood levels with the frequent dosage schedule. This method of administering penicillin has the additional advantages of decreasing the work for the nursing staff and producing less discomfort to the patient.

Miscellaneous

It is not possible to discuss in detail all of the phases of postoperative care, but some of the important features of the regimen followed may be mentioned. Among these are early ambula-

tion, anticoagulant therapy and intestinal decompression.

We heartily subscribe to the initiation of early ambulation, and routinely, all patients in whom resection with end-to-end anastomosis has been performed, are out of bed and walking on their first or second postoperative day. Ambulation usually is delayed, however, until the third or fourth postoperative day where abdominoperineal proctosigmoidectomy has been performed because in this procedure the pelvic floor is not reperitonealized, and we feel that delayed ambulation prevents the small bowel from prolapsing about the recently "pulled through" colon.

We favor the conservative method of treating phlebothrombosis and thrombophlebitis, when they occur. Anticoagulant therapy is instituted in the form of oral dicumarol, as recommended by Allen and Barker.¹ Continuous intravenous heparin is used until dicumarol becomes effective, when a more rapid anticoagulant effect is indicated, as in instances of pulmonary embolism. Should the latter accident occur, we feel that blocking the stellate ganglia with procaine is of considerable benefit in improving the survival rate. Routinely, all patients over sixty years of age, particularly those with varicose veins or a history of thrombophlebitis or embolic phenomena, have their legs and thighs snugly wrapped with elastic bandages before going to the operating room. This procedure is continued for at least a week postoperatively.

As we previously mentioned, intestinal decompression by way of Levin tube with Wangenstein suction is maintained in the immediate postoperative period, following resection of all rectal and colon malignancies, until peristalsis becomes active. Decompression usually is carried out for a two-to three-day period, but longer if ileus occurs. If postoperative mechanical obstruction occurs, a Miller-Abbott or Cantor tube is introduced to the lowest attainable reaches of the small bowel, and conservative therapy by means of suction is attempted first. If this fails, early exploration and more definite treatment is recommended. We admit that each patient at all times must be treated according to his individual needs.

Summary

1. We feel that the administration of high concentrations of oxygen in the immediate postoperative period is of real value as a supportive measure against peripheral vascular collapse. It

is during this period that a considerable degree of arterial oxygen unsaturation exists. Oxygen can be administered most efficiently via the BLB mask.

2. Some of the essentials of fluid balance and protein requirements in the immediate postoperative period are discussed.

3. In our hands the combined oral administration of sulfathalidine and streptomycin has proven to be the most satisfactory method of reducing the bacterial flora of the colon. Aqueous penicillin is used, prophylactically, on a schedule of large infrequent doses.

4. Other phases of our regimen of postoperative care have been mentioned, but in the final analysis each patient is treated according to his individual needs.

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EMPLOYMENT OF RECTUS SHEATH AND SUPERIOR PUBIC LIGAMENT IN DIRECT INGUINAL HERNIA

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RECURRENCE rates for direct inguinal hernia are at such levels that thorough clinical trial of the newer basic methods is justified. As late as 1934 Andrews and Bissell¹ suggested abandonment of the operation for direct inguinal hernia unless pain was present. Recently Ferguson⁷ at the University of Minnesota analyzed 186 patients operated upon for hernia, and followed from three to seven and one half years after operation. Thirty-one per cent of the direct variety recurred. There were sixteen direct inguinal hernias and five recurrences. The more experienced surgeons, though dealing with mainly difficult cases, had the same recurrence rate as interns and residents. The series covered a period from January 1, 1940, to June 30, 1944.

Ever since Marcy¹⁴ in 1881 advocated and Bassini^{2,3,4} popularized suture of the inguinal strata to the inguinal ligament, nearly all popularly used procedures have been variants of such basic methods. In 1898, Lotheissen⁸ used the superior pubic ligament which had been described by Cooper⁶ in 1804. Narath¹⁰ of Utracht was said to have used it before him. About a decade ago, after restudy of the inguinal anatomy, McVay^{9,10,11,12} found that the natural attachment of the lower inguinal strata was the superior pubic and not the inguinal ligament. It was also found that the inferior layers of the inguinal strata were deficient in seven out of every 100 bodies. McVay revived and modified the Lotheissen operation and recently¹³ has reported further surgical experience with the method and some changes in it. Rice has also modified the Lotheissen operation.¹⁷

While operating on a soldier in a desert hospital during World War II, I encountered not only absence of the inguinal ligament following previous operations but also absence of the lower transversus abdominis. To meet this situation I turned down a flap of rectus and pyramidalis sheath and sutured it to the superior pubic ligament. The procedure worked out so well that I operated on twenty-two patients with direct inguinal hernia using this method while in service with the armed forces.¹⁵ Two of the patients in

this series had recurrent direct inguinal hernias which had been operated on elsewhere. Since returning to civilian life and up to April 1, 1949, I have operated on fifty-eight direct inguinal hernias, making a total of eighty operated upon since 1943.

The rectus flap superior pubic ligament method was used in all but five. Others since have reported use of the method which I described in 1946.⁵

A five-year examination follow-up is planned, and so far only letter follow-up has been used. However, in order to encourage reporting of recurrences, the patients have had the situation explained to them and their co-operation has been solicited. To date, two recurrences have been found. One who had been operated upon by me showed a recurrent hernia at the internal ring. The rectus sheath flap was solid.

It now is becoming apparent more generally that superior pubic ligament operations for direct inguinal hernia are more anatomic and physiologic and give the lowest recurrence rates.

Method

Upon opening the cremaster muscle, an indirect hernia is looked for. If none is present, a tongue of peritoneum can be found nearly always and the finger inserted into the abdominal cavity. The extent of the direct inguinal hernia or redundancy of the floor of the inguinal canal can be tested. A large direct sac is opened, excised and its walls resutured. A redundancy can be tucked back into the areolar tissue medial to the superior pubic ligament. The transversus is incised over the superior pubic ligament and the exposure of the ligament completed by blunt dissection, using the finger to retract the femoral vessels. The fascia of the external oblique is dissected back as far as possible on the rectus sheath and a boomerang-shaped flap cut in the sheath of the pyramidalis and rectus muscles. The flap is sutured to the superior pubic ligament for a distance of about 4 centimeters from the pubic spine. Silk or cotton is used. Sutures in the rectus flap are of the mattress type at right angles to the direction of the

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STUDIES IN EXPERIMENTAL GASTRIC CARCINOGENESIS

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MAN STANDS uniquely alone in the animal world with respect to cancer of the stomach, for of all human types of malignancy, this cancer is the greatest killer, but the spontaneous appearance of adenocarcinoma of the stomach in lower animals is an extremely rare phenomenon. Up to 1936 only three cases of spontaneous gastric adenocarcinoma in mice had been reported in the literature. By 1938 two more had been added to the list. This survey covered a period of several decades with observation of many thousands of mice by several groups of investigators.

Today we are still concentrating our effort on inbred strains of mice. Several strains of more recent origin do develop spontaneous prepyloric glandular lesions as the animals grow old, but there is not general agreement as to the malignant quality of the lesions. The "T" strain started by Strong in 1925 has a high incidence of adenomatous hyperplastic lesions appearing spontaneously in the pyloric stomach.¹⁸ A more recent strain produced in Strong's laboratories, the "NHO" strain, has prepyloric lesions that consist of branching glandular elements with small cysts and polypoid projections. This strain and a subline, the "BRS," are being extensively used today. Recently it was shown that whole body x-ray irradiation and subcutaneously implanted methylcholanthrene were both ineffective in changing the incidence or degree of malignancy of these lesions in these strains.⁹ This observation is of very real interest and importance in this field.

The well established "C3H" and "A" strains are also widely used. The author is operating upon mice of these strains and implanting 20-methylcholanthrene into the glandular stomach wall. The animals are then bred and the offspring maintained as breeding families. The mice in the families are then treated in the same manner, and this procedure will be carried through successive generations. Ultimately the strains will be crossed, and genetic changes tending to a susceptibility for glandular cancer will be looked for.

Dogs are very refractory to the induction of

cancer of the stomach with carcinogens, but lately there is some evidence that the problem of gastric polyposis may well be studied in old dogs since they do develop this lesion with age. Monkeys do not develop cancers with the present known carcinogens, as shown this past year by Pfeiffer and Allen when they reported an eleven-year study using fifty monkeys.¹⁵ Rabbits have a glandular mucosa that regenerates from traumatically induced ulcers with a hyperplastic glandular overgrowth, but carcinogens given to these animals so far have failed to produce malignant lesions.⁷ Laboratory rats will develop adenocarcinoma in the glandular or prepyloric stomach when carcinogens are implanted in the stomach mucosa, but the labile nature of the squamous forestomach of rats hinders sound evaluation of results. It can be appreciated from this brief summary that inbred strains of mice are still the animals of choice for this type of investigation.

Twenty methylcholanthrene and 1, 2, 5, 6 dibenzanthracene are the most effective carcinogens in use today for gastric carcinogenesis. Other hydrocarbons are used for cancers elsewhere in the body, but these two stimulate epithelial cancers in the gastrointestinal tract better than any others.

Methylcholanthrene fed to mice in prepared feeds is ineffective in the glandular portion of the mouse stomach. The squamous lined fore-stomach of mice will show squamous carcinomas, but these are not comparable to human adenocarcinomas. Consequently, much effort today is directed toward the prepyloric or glandular stomach. Methylcholanthrene can be implanted in the glandular stomach wall as crystals or injected in horse serum, and glandular cancers will result. To date, the dissolved carcinogen seems to be more effective than the plain crystals.

Lorenz of the National Cancer Institute has developed many emulsions of methylcholanthrene in olive oil or mineral oil as a base, utilizing various wetting agents to obtain close contact with the mucosa.¹¹ These emulsions, however, do not induce glandular cancers; only the squamous forestomach and the intestine develop cancers. The mineral oil emulsions have a higher viscosity than

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the olive oil emulsions, and this factor seems to be important in getting more fore-stomach cancers with the former emulsions as against the olive oil emulsions.¹² In addition, precancerous esophageal lesions also appear with the mineral oil emulsions and not with the olive oil emulsions. The "I" strain mouse with the spontaneous glandular stomach hypertrophy so far has been refractory to this type of induction in the glandular stomach.¹² When mineral oil emulsions are used the first squamous lesions appear in ninety-four to 130 days. When methyloanthrene is implanted in the gastric wall the adenocarcinomas develop as early as sixty days and as late as 330 days. The author uses mineral oil emulsions similar to those mentioned above and intubates the stomachs of mice daily giving a measured quantity. This will be considered in greater detail later.

There are still discrepancies as to what constitutes a malignancy in this type of animal work. Earlier investigators labeled any hyperplastic cystic lesion that had a tendency to downgrowth as malignant. Today the animal lesions must be anaplastic and infiltrate all layers of the stomach wall and grow on the serosal surface. Metastases, of course, constitute the best, most unequivocal evidence of malignant processes.

Many dietary substances peculiar to man have recently been investigated in mice. Tobacco tar was reported carcinogenic for rats' stomachs some years ago by Roffo, but the most recent studies using thick inhaled tobacco smoke and ingested tars have produced no gastric cancers. W. R. Peacock of Glasgow, Scotland, has three adenocarcinomas out of 148 genetically heterozygous mice fed for months on super-heated fats. The fats are those used in cooking for humans and are heated and reheated to 300° Centigrade.¹⁴ These apparently are the first well-authenticated true malignancies produced in this manner, since much doubt is thrown upon Roffo's earlier work with hot fats in rats. Experiments are in progress in our laboratories testing the effects of mustard on mouse gastric mucosa along with methylcholanthrene. Heat is indicted as a physical carcinogen, still rather empirically, but meagre evidence is appearing to substantiate the idea of thermal internal carcinogenesis and thermal initiation of atrophic gastritis. Only a few experimental results in animals are available. The author is combining the effects of heat with the desquamating effect of eugenol and the carcinogenic effect of methyl-

cholanthrene emulsions. The eugenol is given by tube to mice of various strains several times weekly, and then hot carcinogenic emulsion is instilled into the stomachs of one series and cold emulsion into another series on alternate days. This work was recently started, and no data are available as yet. A previous experiment by the author intubating a series of A-C3H and DBA mice with hot water alone at 65° Centigrade gave negative results in the esophagus and stomach, reflecting the results of others using the same technique.

The mucus of the stomach is considered to be a protective barrier for the delicate glandular cells. Ivy has recently shown that it has a thermal insulating effect with temperature around 62° Centigrade.⁴ Mucus also exerts protective effects by acting to buffer and neutralize acid secretion. This complicated four-fold function of gastric and esophageal mucus provides an excellent basis for work. It is believed today that our carcinogenic agents would act on the glandular cells if we could produce mice that had long-standing atrophic gastritis and impaired mucous cell function. That there is a specific intracellular resistance of gastric glandular cells to carcinogens is doubted.

Bile is known to penetrate mucous layers and this fact has intrigued investigators for some time. To date, tauracholic acid alone has not proved to be carcinogenic.² On the other hand, the best gastric carcinogen, 20-methylcholanthrene, can be synthesized from bile acids and has a chemical structure similar to bile acids. No proof exists showing such a synthesis within the animal body as far as is known today. The author now has experiments under way testing the possible effects of bile as whole bile salts along with methylcholanthrene in the mouse stomach. The bile might penetrate the mucous barrier and over long periods of time allow sufficient direct action of the carcinogen to induce adenocarcinomas. Recently Hollander has demonstrated the tremendous desquamating effect of eugenol on the gastric mucosa in pouch dogs. He has studied the complete denuding and regeneration of the mucosa over three-month intervals. The author is using eugenol in the above-mentioned experiment with the hot and cold carcinogen emulsions. It is hoped a procedure of this kind will enable us to produce adenocarcinomas more readily and more abundantly. A good deal of basic work on mucous cells and their secretion is needed, and correlations with human gastric physiology is a must.

Other experiments in our laboratory deal with the effects of various deficiencies on the gastric mucosa. Mice are kept on iron deficient diets until they develop anemias in order to determine the influence of this anemic state on the development of adenocarcinomas due to methylcholanthrene implanted into the gastric glandular wall. Rats, infected with the spiroptera worm *gongylo-nema neoplasticum*, are being fed vitamin deficient diets in order to more thoroughly evaluate the much debated results of Johann Fibiger.^{5,6} The generalized pronounced effects of vitamin deficiencies in epithelial cells seems too important to be ignored even though extensive work has been done in this field.¹⁰ The metaplasia of glandular cells into squamous cells would seem to involve basic metabolic processes, and it is hoped some faint additional light might be shed upon this field in the near future.

This has been a brief summary of some of the basic animal research now under way in the University of Minnesota Medical School relative to stomach cancer. Many other projects, clinical, physiological, and chemical, are in progress in various departments, and round out the research program in this field.

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DIRECT INGUINAL HERNIA

(Continued from Page 909)

fibers. A small, cervix cutting needle is used for deep sutures into the superior pubic ligament. If there is any evidence of weakness at the hinge, a row of sutures may be placed there. The cord is dropped into the concavity and the external oblique sutured anterior to it, allowing an aperture at the external ring sufficient to admit the tip of the fifth finger. The procedure occupies no more time than older methods, and difficulties with vessels are more hypothetical than real.

In addition to direct inguinal hernias, the method is applicable to indirect inguinal hernias with large internal rings and femoral hernias. It is especially applicable to direct recurrences because the work can be carried out in a virgin field.

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History of Medicine In Minnesota

MEDICINE AND ITS PRACTITIONERS IN OLMSTED COUNTY PRIOR TO 1900

NORA H. GUTHREY

Rochester, Minnesota

(Continued from August issue)

Practitioners of Medicine in Olmsted County

Itinerant Practitioners, Quacks and Medicine Shows.—Olmsted County, and particularly Rochester, from the fifties into the nineties and especially in the late sixties and the seventies, was a happy hunting ground for all sorts of irregular practitioners of the healing art. Some of these gentry were frankly itinerant. Many of them, equally transient, made a point of expressing appreciation of the beauty and enterprise of Rochester and declaring intention of settling there permanently. Many came from Wisconsin and Illinois where, in the seventies, laws were enacted against irregular and unqualified practitioners. In that decade Rochester newspapers began to publish protests against the "tramp doctors" that were infesting the city and imposing on the credulous, of whom there were many. The abortive medical licensure legislation of 1869 (repealed in 1870) in Minnesota served only to exacerbate the nuisance of quacks and impostors. Designed to exclude the irregular and the unqualified, the act failed signally in its purpose. It rather gave the irregulars a chance, which they eagerly accepted, to organize medical societies and issue certificates to practice. After the protective legislation of 1883 the comments in the press chiefly concerned strangers in the city who had been arrested for practicing medicine without license.

From more than a hundred names of such exploiters of the public, a few are given here. As early as 1855 came Dr. William Hunter, who for a time lived in St. Peter, giving "medical inhalation and all else," especially for tuberculosis and other diseases of the lungs and the "air passages." Dr. McCall, of Wisconsin, in 1862 was representative of many who toured the county lecturing on anatomy, physiology and disease. A few years later the *Rochester Post* of April 3, 1869, commented on such a lecturer and his co-worker:

We have been told of a sharp system of medical practice by a firm who were this week in Pleasant Grove and Stewartville, in this county, and are on their way further west. A Dr. Hamelin whose advertising has been published in this paper for a couple of weeks, made his appearance at Pleasant Grove, where he gave an interesting free lecture on anatomy and physiology, and announced the coming of Dr. Morse, who appeared within a few days in the neighborhood, giving diagnosis to large numbers of the afflicted for whom he prescribed at rates ranging from \$50 upward, half cash and half notes.

The local career of Dr. Morse ended when an irate citizen of Pleasant Grove followed him to Stewartville and stood outside the doctor's stopping place shouting the practitioner's trickery to all listeners. The man from Pleasant Grove received back his cash and notes and the doctor departed.

In 1863 Dr. J. F. Underwood, "celebrated oculist and aurist" of Chicago, came

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to the Stevens House, Rochester, to treat any disease of long standing, especially of eye and ear. There were countless "distinguished" opticians; Dr. A. Weinhold was one of the earliest, in 1864. In 1865 Dr. B. Phelps and Dr. F. H. Sime, oculists and aurists, came from St. Paul, and thereafter Dr. Sime returned at intervals, from Chicago and later from Winona, where he represented the State Eye and Ear Infirmary, offering "the best French and English artificial eyes," which he inserted without pain, he said, and which he guaranteed to fit. In the later sixties came Dr. Barth, "the most eminent surgeon now living," representative of the Milwaukee Medical and Surgical Institute, which was established in 1867. Dr. N. I. Lund was a homeopath from Norway who brought "renowned European Rheumatic Chains" which, he claimed, had been successfully applied for numberless diseases where all other remedies had failed. And in 1868 and 1869 came the notorious Dr. William P. Duvall, the Natural Healer and Practical Physician of the Western Healing Institute. A botanic physician, Dr. Duvall had the added advantage, he stated, of being the seventh son of a seventh son and of having possessed since the age of ten years peculiar and natural healing powers, whereby he healed all known diseases by laying on of hands: "The patient has only to sit calmly a few minutes, and all pains and ailments will gradually pass away." It presently came out that Dr. Duvall, who had started life as William D. Potts, had poisoned four of his wives, the last of them a girl whom he had married at Owatonna, Minnesota. He was checked in his career by imprisonment in the state penitentiary of Wisconsin at hard labor.

There were Dr. Ferrard, the "celebrated Spanish physician," who treated for deafness, sore eyes and asthma; Dr. J. J. S. McCabe, Indian Doctor; Schenastanaux, Indian Doctor; and Dr. Lyon, the "celebrated Brazilian doctor," whose vegetable treatment was advertised as a triumphant victory over sickness and premature death: "No indelicate examinations or exposures. By observation alone the doctor will explain and point out location of trouble without asking questions and without requiring any explanations." Dr. William Livingston, the Old Indian Doctor, for some time in 1878-1879 made Rochester his headquarters. Dr. S. C. Torpy in the seventies came from Green Bay, Wisconsin, practiced under the Indian botanical system of medicine and claimed to cure all kinds of chronic diseases, fever sores and phthisis, abscesses and asthma. He would announce that he was coming for one week and would advise his numerous patients and suffering humanity in general to take due notice and govern themselves accordingly. Dr. Spinney, proprietor of the Electro Medical Institute of Milwaukee, announced that he was very successful in the treatment of "diseases of the lungs and internal organs." Several of the surgeons of the Central Surgical Infirmary of Indianapolis, Indiana, came seeking to help those who were afflicted with any disease of the eye or ear, goiter, cross eyes, clubfoot, spinal curvature, fistula-in-ano, piles, epilepsy and chronic diseases. Dr. Hebern Claflin cured cancers without the knife, as did Dr. W. Wheeler, who added to his professional repertoire cures for sore eyes, female diseases, rheumatism and catarrh. There were other traveling practitioners, ad infinitum, including "foot doctors" and clairvoyants and magnetic healers. One of the last-named lectured on "human magnetism or the electric philosophy of life."

Worthy of mention also are certain practitioners, not frankly itinerant, of the early decades who advertised freely in local newspapers of many sections of country other than their own places of residence and who probably reaped a considerable harvest from the long-distance business that resulted. From the *Federal Union*, of Rochester, of April 27, 1872, comes the following excerpt from a detailed advertisement that perhaps had special appeal:

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Dr. C. M. Mack, graduate of Guy's Hospital, London, England, and for over two years confidential physician to Her Majesty, the Queen; also late of the Medical University of New York, has now located at Indianapolis, and will give advice to the sick abroad as well as home. . . . The reasons are: 1st: That your local physicians are so much occupied in the treatment of acute diseases at the bedside of their patients that they have neither the time nor patience to give proper attention to a long standing and supposedly incurable disease. 2nd: The man of eminence who is called upon may have gained all his great reputation in surgery, instead of medicine, so that the invalid, not recognizing this fact, supposes he or she is trying the best skill that our country affords. Dr. Mack is successfully treating just such cases all over the country, by letter and express, whose faces have never been seen, as well as in his office at home. . . .

Dr. Mack invited every reader of the announcement who had "any affection of the head, throat, lungs, heart, stomach, liver, kidneys, bladder, bowels, womb, genital organs, or rheumatism or neurologic difficulties, or eruptions of the skin, blood impurities, tumors, cancers, nervous affections, diseases of the eye or ear, etc. . . . to send the symptoms they have and the price of a package of medicine (\$5.00) on receipt of which they will receive one package free."

Still another type of impostor was a Dr. John Burns, who came from Iowa, it was said, and frequented Winona and Rochester. The *Winona Republican*, quoted by the *Rochester Post* of April 1, 1881, said:

It seems to be a successful game he is working, the details of which are as follows: In the morning his head is free from the debilitating effects of the previous night's libations and he sallies forth with business in his eye. If he meets a person on the street who seems to be sick, he is liable to stop the individual, talk a few minutes and then tell him what ails him. It makes no difference where he finds his invalid; he looks until one is discovered, seems to be wonderfully endowed with the power to read his disease and the man's character; inspires confidence by his adroit and honest behavior and finally prescribes for him. In this way he picks up two or three dollars during the forenoon and readily spends it in the afternoon and evening. Once before he was lodged in the station house in Winona, his second incarceration being chronicled last night. John should take a good long walk.

Not long afterward there was an account of his being in jail at Rochester; he died from delirium tremens at Brainerd in 1882, it was reported.

Certain of the visiting practitioners were accepted as of a respectable category. Dr. Clark A. Miner, of Chicago, who came to Rochester every three months, beginning in 1874, established on Broadway, in 1878, the Rochester Medical Institute, which was staffed by ten physicians and surgeons; evidence has not appeared that the institute was long lived. Dr. Lewis Pond came from Aurora, Illinois; there is mention of his having removed a cancer from a patient at Haverhill. Dr. L. P. Bunce, an eclectic practitioner of Lake City, primarily oculist and oral surgeon, stated that he gave treatment for all specific diseases of the blood. In the nineties Dr. A. H. Muedeking, who for some years lived in Owatonna, came annually with his "excellent white flint spectacles."

Up to the turn of the century and beyond, the numerous medicine shows, which had toured the country and all southern Minnesota as early as 1864, continued to thrive. The Wizard Oil Troupe, headed by "doctors," came at intervals over many years, giving concerts and selling Hamlin's Wizard Oil, which was said to cure everything from bunions to diphtheria. It was this company, in 1883, that caused Dr. W. J. Mayo, an earnest young physician just out of medical school, a moment of disillusion; no doubt other physicians in the region had similar experiences. Dr. Mayo had treated an old Irishman for lumbago, had received the patient's voluble thanks, and with some gratification had heard him tell Dr. W. W. Mayo that his son Will was a wonderful doctor. A little later Dr. W. J. Mayo saw his patient seated happily on the wagon of the Wizard Oil Troupe, proclaiming

that all doctors had failed and that he owed his complete relief from suffering to the magic of Wizard Oil. Later came Dr. T. J. Smith's traveling medicine show and that of a Dr. Laird. Among the many who came later were representatives of "Veno, from the land of the Rising Sun," and a group of two patent medicine vendors and two colored comedians who for a week gave daily and nightly entertainment at the corner of Zumbro Street and Broadway in Rochester. One of the last of the larger medical shows was that of the Kickapoo Medical Company that toured all parts of the country giving entertainments and selling medical wares that were guaranteed to cure all ills. This company laid stress on the removal of tapeworms: In the *Rochester Post* of May 24, 1895, was a statement that Dr. G. Peterson of the Kickapoo Company had removed a tapeworm sixty-four feet long from a local woman, one Mrs. Johnson.

Patent Medicines.—Patent medicines were at their zenith in the second half of the nineteenth century in Olmsted County as elsewhere. Although traveling vendors and medical shows dealt extensively in certain of these preparations, they handled a minimal portion of the concoctions that were available to the public. Scanning local newspapers of the period from 1856 to 1900 gives the impression that the manufacture and sale of patent medicines and of bitters was a leading business of the time, so numerous and so extensive were the advertisements. Some druggists, even though they solicited the prescription business of physicians, gave much space in their stores to patent medicines, which no doubt were highly profitable merchandise. These druggists became wholesale agents for the manufacturing companies, and if the agents did not advertise the medicines, the manufacturers did. After local railroads had quickened communication and shipping, the distribution of patent medicines increased greatly and the advertisements so burgeoned as to overshadow announcements of even such offerings as the new labor-saving farm implements, among which were seeders, cultivators, mowers and reapers. From almost any issue of any newspaper, especially during the sixties and seventies, the highly descriptive names of hundreds of preparations could be taken. Often the advertisers ended the long lists with the line, "And a host of other patent medicines too numerous to mention." There were pills and "health restorers" for the relief of ailments of mankind; painkillers, cathartics, and diuretics, and preparations, whose uses were hinted with ponderous delicacy, for treatment for venereal diseases; remedies for catarrh and compounds for pulmonary and respiratory afflictions of all kinds; plasters, liniments, balms, balsams, ointments, soothing syrups, hair restorers and aids to beauty.

There were bitters without end. A few were Dandelion and Wild Cherry Bitters, which came from Iowa, Hostetter's Bitters, Swain's Bourbon Bitters, Roback's Bitters, Plantation Bitters, Hoofland's German Bitters, and Wright's Health Beverage or Tonic Bitters. Dr. Walker's California Vinegar Bitters were recommended by the maker "for everything from rheumatism to intermittent fever—all dyspepsias, skin diseases, pin, tape and other worms. In fact, Dr. Walker offers \$100 reward for an incurable case, provided bones are not destroyed by mineral poison and vital organs not wasted beyond repair" (*Rochester Federal Union*, May 20, 1870). From Goodhue County, Minnesota, came A. J. Clark's Red Wing Stomach Bitters. Rochester, Olmsted County, was the home of the Gopher State Bitters, which were manufactured by Dr. W. A. Hyde, in 1868, and were marketed widely for a time by Daniels and Company of the city.

In immediately hampering legitimate medical practice, the itinerant practitioners, the quacks and impostors, and the patent medicine manufacturers and vendors ultimately advanced it. Words from the *Golden Bough*, on magic and

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the black art, might be adapted to apply to quackery in medicine, to say that quackery paved the way for science, that if the irregular practitioners did much evil, they were the source of much good, and that if quackery was the child of error it yet became the mother of freedom and truth.

The Growth of Medical Practice in Olmsted County

Someone said, "Disease is from old; nothing about it changes. It is we who change, as we learn to recognize what was formerly imperceptible."

Some of the early practitioners of medicine in Olmsted County, as elsewhere, were of the type who said, in effect, with Dr. John Lettsom

When patients to me do apply,
I physics, bleeds and sweats 'em;
If after that they choose to die,
What's that to me, I let's 'em.

The best of the early physicians, however, dignified in manner, formal in dress, competent practitioners in their day, came with courage and the spirit of truth, and with a tolerant and generous attitude toward the people with whom they lived. Some of them apparently felt, as James T. Adams has said of pioneers, that the glory of the epic is lost without the dream. Some of them became projection points upon the level of their times.

Pioneer settlements of southern Minnesota were scattered and the early physicians few, so that the practitioners of each county traveled long distances, often into neighboring counties, to care for the sick. They made their rounds, in town and on their long rural "rides," on horseback or in horse-drawn vehicles. It is impossible to overemphasize the inconveniences they bore in lack of facilities and of communication between town and country, and the hazards of roads and weather that they overcame. Not until the autumn of 1898, when conditions of travel had improved somewhat, did an automobile enter Olmsted County. A banker of Spring Valley, Fillmore County, drove his car to Rochester, making the trip of thirty miles in two hours and fifteen minutes, including all stops, and stops were frequent, "to prevent teams on the road from becoming frightened." The automobile, which was made in Cleveland, had a gasoline engine of five and a half horse power, situated under the seat, and ran "easily fifteen miles an hour on any kind of road. It cost just \$1,000 and is a luxury few will care to acquire" (*Record and Union*, August 28, 1898). The *Olmsted County Democrat*, however, was more optimistic and predicted that the machine might in time oust the horse: "Dr. C. H. Mayo was much interested in examining this means of locomotion and may conclude to purchase a horseless carriage for himself." As a matter of fact, Dr. C. H. Mayo, the first physician in Olmsted County, certainly in Rochester, to own an automobile, became the possessor of a steam-propelled machine in January, 1900.

The facts that intercounty practice became general and that physicians of different sections began to summon one another in consultation led ultimately to the regional organization of medicine. Although in the early period professional amity did not exist as it does today, it has become apparent that the best qualified physicians respected one another, that they were increasingly aware of the imperfection of medical education, and that they early began to work together for the good of the public and the honor of the profession.

Medical education, even in the best tradition of the early times, was faulty. The more conscientious and able of the regular profession tried to improve their knowledge by adding to their treasured libraries the best of medical textbooks and

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medical journals. Accent was not placed publicly on study, however, because it was assumed by the laity of average communities that physicians were born, not made, and that if a practicing physician had to study his profession, he was not good at it. The lives of most of the early physicians were complicated by this attitude of the people, by rugged physical conditions of living, by insufficient means and by having a clientele in the same economic predicament as themselves. In the first decades of Minnesota it was an accepted thing that physicians should have more than one remunerative occupation in order to make a living for themselves and their families. In practicing their profession they were hampered by the limitations imposed on them by lack of scientific knowledge of medicine and by meagerness of equipment. The pharmacopeia was small, anesthetic agents were few and imperfectly understood, mechanical aids that a few decades later would be essential were unknown. One outstanding pioneer physician and surgeon (David S. Fairchild) said, long afterward, "The best we could do was make a diagnosis as to the nature of the disease and select a medicine which experience had shown to be the best suited to the case. We knew nothing about germs or antiseptic methods, so we had no worries on the score of blood poisoning . . ." The concept of disease and of medical treatment was one of gradual change.

For about twenty-five years in its early history, Minnesota, because of its bracing climate, was widely known and advertised as a natural sanatorium for persons suffering from consumption (tuberculosis), and there were consequently among the early settlers many sufferers from pulmonary disease and many who succumbed to it. In the *Rochester City Post* of March 24, 1866, there was quoted a communication from a Saint Paul correspondent to the *New York Herald* for the benefit of invalids coming west:

Those who take the least medicine and are farthest from society and influence of other invalids, progress most rapidly. . . . Do not start from home before the middle of April because there is no certainty of the Mississippi being open for navigation before that period. A journey overland from La Crosse in the spring of the year is no trifling affair, even for persons in full enjoyment of health. Besides that, the March winds are no better than they might be, and it would be better for the patient to avoid them, perhaps, and wait patiently for the river to open, rather than run the risks incident to a long journey in stages.

By 1870 the rigors of winter were conceded to be a drawback for invalids, and there was an annual exodus of such persons to Colorado, California and other states of more equable climate. By 1874, although the healthful year-round climate still was stressed, the advantages of summer in Minnesota were being emphasized. In this year Andreas said of Olmsted County, ". . . the uniformity of temperature makes the county an asylum for those who are afflicted with pulmonic diseases. It is also free from malarial influences, and is probably, with the rest of the state, one of the healthiest countries in the world. It is situated on the open prairie, it has in summer the full advantages of the refreshing breezes prevalent at this time, and year by year it is more and more becoming the summer resort of those who seek relief from the oppressive heat of a southern or less favored locality."

There were especially unfavorable seasons, however, and in Rochester the newspapers abounded in comments on adverse weather and the train of ailments that came with it. The winter of 1856, which has come down in history as one of the severest seasons ever known in the southern part of the state, brought loss of life to many who were not inured to such rigors. Most of the earliest homes furnished inadequate shelter. Even in the average winter, children who trudged to district schools, and all who were obliged to travel the roads—teachers, physi-

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cians, preachers and farmers—suffered from exposure. The winter of 1863, however, was open, "not a day of sleighing all winter," and there were much typhoid fever and a variety of respiratory affections. An editor exclaimed, "Give us back old time Minnesota winter with its equable, dry, bracing and exhilarating climate, and typhoid and tendency to indisposition will vanish; this was a year of high mortality from diseases of various kinds." In the normal winter of 1865 there was little sickness; the general health, it was declared, had never been better. And so it went.

Smallpox was prevalent annually, as were other contagious diseases, and editors warned, "Let vaccination be thoroughly attended to." Certain local physicians, among them the Drs. Cross, advertised, as early as 1860, pure vaccine virus that they would "insert in individuals or whole families." In 1864 the death from smallpox of a soldier in Rochester, who had been quarantined in a none too suitable house on the outskirts of the city, led to acrimonious exchange between newspapers of Chatfield and Rochester, and to widespread publicity, because regional papers copied the items. A Chatfield editor declared that the patient had frozen to death and that burial had been made in a swamp by tapping the body down with a pile driver: "If one half of it is true, every heathen in that delectable village deserves an attack of varioloid at least." The Rochester editors denied the allegation with bitterness, and when smallpox broke out in Chatfield, made the most of their opportunity and offered to lend the alleged pile driver for disposal of possible victims.

Early Concept of Disease and Medical Treatment.—In the early decades in the county the popular concept of health and disease and of medical treatment was reflected by editorial comments, and inasmuch as there were few if any contrary expressions published by physicians, it is assumed that the concept expressed was theirs also. In the summer of 1865 there was much discussion of the enormous number of mosquitoes, and of prevailing cholera morbus, and there were cautions about diet, exposure and overexertion. Fear was expressed that as a consequence of the wet summer the autumn would be unduly sticky, but apparently no connection was suspected between the summer, the mosquitoes and sickness. It was said, a few years later, and the opinion was held by physicians, that malarial diseases originated in poisonous emanations from the earth, which embodied a subtle principle termed malaria, which was constantly rising, like an imperceptible gas, poisoning the air and generating disease, such as chills, fever, pneumonia, diarrhea and dysentery; and that the low temperature of the Minnesota winters effectually destroyed any malaria that might lurk in the soil ready to spring forth in warm weather. There were statements about the salubrious effect of perturbation of the air by wind, moisture being a powerful agent in generating diseases and the main vehicle of malaria and other atmospheric poisons, which clung to the moisture or were held in solution by it.

(To be continued in the October issue)

President's Letter

THE DEFENSE OF ETHICS

DEFINING medical ethics would be as difficult for most patients as reciting the Bill of Rights from memory; yet their very lives may depend on this volume of recorded traditions and ideals and the dictates of a group conscience. Perhaps it is our fault that medical ethics has not assumed a greater significance to the people we serve. Working 10 or 12 hours a day to cure sick minds and bodies, we have failed to think of the broader aspects of our relationship with the public.

While we have lived in this way, taking a pardonable satisfaction in the brilliant health records of our state, the symptoms of a great national illness have been developing and not until very recently has the doctor become aware of them. Our newspaper friends have criticized us—in their usual forthright and constructive way—accusing us of being “asleep at the switch” and “living in an ivory tower.”

Now we have become militant. We must be. For we have the health and safety of millions to protect. We are trying, with every means at our command, to warn the public that government control of medicine would steal the American heritage of medical skill, medical discoveries and medical care. Government control would rob the patient of his right to choose a family doctor, would make public records of the confidential information that comes to a doctor by virtue of the trust and faith his patient has in him. Government control would increase an already gigantic tax burden and reduce the American standard of living, at the same time that it is lowering the quality of medical care, retarding medical research and building up a huge bureaucracy that will not belong to the people, as the ideal government does, but will enslave them.

In defense of the ethics of private practice, we have decided to purchase space in our community newspapers to inform the public what we believe would be the results of government control. We felt that we had as much right to be heard as, for instance, manufacturing plants and labor unions who buy space in newspapers to inform the public of their attitudes and policies.

For that decision, we have been attacked by certain groups who claim that we are “bribing” the press.

PRESIDENT'S LETTER

The idea that the newspapermen of our state could be bribed is ridiculous to anyone except editors of propaganda sheets not worthy of the name "newspaper" and power-hungry political job seekers, who hope, at any price, to cement their own futures in the vast superstructure of clerks, supervisors, investigators and tribunals that would mount with the passage of a compulsory health insurance bill.

The newspapermen and women of Minnesota, highly trained and educated, dedicated to the principles of freedom that the constitution guarantees the press, and imbued with a sense of community responsibility that is unequaled in any other profession, have placed Minnesota high in the ranks of journalistic excellence. Minnesotans have confidence in their newspapers because they know they are receiving, in the news columns, an objective recounting of the day's or the week's events. The editorials they know to be the editor's own carefully thought out opinion and interpretation of those events. What better media than newspapers like these could doctors of Minnesota select for conveying their own special message to the public?

It is true that personally and professionally most editors in Minnesota are opposed to any system of compulsory health insurance and they speak out against this threat in no uncertain terms. But editors have other causes to defend, other issues to consider, in their papers and no matter how deeply they feel about government domination of medicine we cannot expect that they will sit down and write an editorial on that subject every day or every week. Yet, as doctors, we regard this issue as one of our greatest responsibilities, and we want to bring the facts before the people as often as we can; hence, by direction of the House of Delegates of the Minnesota State Medical Association, our medical societies are now permitted to buy advertising space to tell their story.

In defending the spirit and letter of our ethical code in this way, it would be absurd to suppose that we were trying to destroy the ethical code of newspapers which, in its spirit of freedom and service to humanity, so closely parallels our own.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor*; GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

HOSPITAL, SURGICAL AND MEDICAL INSURANCE

ON RECOMMENDATION of the Council on Medical Service of the American Medical Association, the House of Delegates in June, 1949, decided that the Associated Medical Care Plans, which is an organization made up of many medical care plans throughout the country, should be absolutely independent of the AMA, but that the AMA should continue to approve or disapprove medical insurance policies offered by the plans sponsored by the various State Medical Associations and those offered by the various insurance companies. The House of Delegates also stressed the importance of the AMA (and that means all of us) giving all the publicity possible to the desirability and, in fact, necessity for this type of insurance for everybody. This necessity applies to hospital insurance just as much as to medical care insurance.

This idea of the necessity to insure against the high cost of so-called catastrophic illness is not new. This instigated the formation of the Blue Cross some fifteen years ago and the Blue Shield just a few years ago. The Blue Cross now protects over 34,000,000 persons, and the Blue Shield over 11,000,000. That the public recognizes the need for such insurance is indicated by the fact that at present nearly 61,000,000 of the population are protected by voluntary hospital insurance of all types, over 34,000,000 by surgical, and nearly 13,000,000 by medical voluntary insurance.* The growth of medical insurance during its first years of existence has been even more rapid than was that of hospital insurance.

It is highly important that both these types of sickness insurance should be expanded to the limit. The overall cost of medical care so provided is much less than a tax-supported program would be and does not disturb the doctor-patient or hospital-patient relationship in the least. The Blue Cross and Blue Shield plans are conducted on a non-profit basis with a low overhead cost, and

insurance of this type offered by many insurance companies is written on a basis where the cost is controlled by the actual experience of the class insured. Rates and benefits offered by the Blue Cross and Blue Shield are comparable with the indemnity policies offered by the many insurance companies in the field. However, Blue Cross offers full service benefits with the exception of room allowance and x-ray, and Blue Shield provides full service benefits to low income groups of people.

The field covered by the Blue Cross in the past has been limited to groups of employed individuals. Provision has been made for dependents of policyholders reaching the age of nineteen to apply for individual policies. By so limiting the policyholders to employed individuals the Blue Cross has been able to keep its rates low and at the same time insure against such hospital costs as operating room, anesthesia, laboratory service, surgical dressings, drugs, serums, intravenous solutions, liver extracts, glandular products, physiotherapy, oxygen, electrocardiography and basal metabolism—items which can easily mount up—in addition to the room cost. The need for increasing the former \$5.00 provision for room cost in view of the marked rise in room rates in recent years has now been met by a slight increase in policy rates of five cents a month for individual policies and twenty-five cents a month for family policies for each additional dollar in excess of \$5.00 up to \$9.00. Thus a contract providing \$9.00 a day for hospital room in addition to the other service benefits of the contract costs \$1.45 a month instead of \$1.25 for the \$5.00 room allowance contract plus other service benefits for a single subscriber and \$3.75 a month instead of \$2.75 for the family subscriber. The Blue Cross is seriously considering issuing a non-group contract in the near future which will be offered to individuals whether they are employed or not, particularly to those who are not now able to enroll through a group. The cost of this contract will necessarily be somewhat higher than group rates.

The Blue Shield, for the remarkably low cost

*A Survey of Accident and Health Coverage in the United States. Prepared by The Survey Committee of the Health Insurance Council, August, 1949.

of \$1.00 monthly for the individual and \$2.25 for the family, provides surgical, obstetrical, and limited medical care which constitutes complete payment of the doctor's fee for individuals with an income of less than \$2,000 a year or a family with less than \$3,000 a year. To those with a greater income, insurance payments are applied to the doctor's bill. So far, the Blue Shield insures only groups but is seriously considering issuing individual policies in the near future.

There are probably thirty insurance companies licensed in Minnesota that write hospital, surgical and medical policies. They write not only group policies but individual policies on an indemnity basis. The rates offered are low and policies offered meet the present high cost of hospital beds—up to \$9.00 a day. A prospectus issued by one insurance company offers a family policy covering \$5.00 a day on a hospital bed, surgical and limited medical care for \$84.00 a year. Policies vary in cost and benefits and should be read before they are purchased.

DIHYDROSTREPTOMYCIN

ALTHOUGH streptomycin is a valuable antibacterial agent its neurotoxicity has impaired its usefulness. This has been especially true when streptomycin has been used in the treatment of tuberculosis and other chronic diseases for which the drug has to be administered for several weeks or longer. The discovery of a new drug with the antibacterial potency of streptomycin but without its neurotoxicity, or even with a decreased neurotoxicity, would be a step forward.

Dihydrostreptomycin, a chemical derivative of streptomycin, which recently has been made generally available, seems to satisfy these requirements. *In vitro*, studies have shown that dihydrostreptomycin has about the same activity as streptomycin against most micro-organisms, especially *Mycobacterium tuberculosis*. Unfortunately, those tubercle bacilli which are resistant to streptomycin are equally resistant to dihydrostreptomycin. Several groups of investigators have found streptomycin and dihydrostreptomycin to be equally effective in the treatment of experimental tuberculosis in various species of animals due to strains of *M. tuberculosis* that are sensitive to streptomycin. Likewise, it has been shown that dihydrostreptomycin has no demonstrable effect on experimental tuberculosis due to tubercle bacilli that are

resistant to streptomycin. Up to now, too few patients with tuberculosis have been treated with dihydrostreptomycin to justify any final conclusions regarding the therapeutic efficacy of this drug as compared with that of streptomycin. However, most of the workers who have studied this problem are of the opinion that there is no essential difference.

It is the lesser neurotoxicity of dihydrostreptomycin that makes it an improvement over streptomycin. Gram for gram, dihydrostreptomycin less frequently causes damage to the vestibular apparatus than does streptomycin and, when vestibular damage does follow use of dihydrostreptomycin, it comes later in the course of treatment, is less severe, and is less likely to be permanent. However, it should be emphasized that dihydrostreptomycin can cause the same toxic effects as streptomycin and that dihydrostreptomycin should be used with caution. This is especially true if renal function is poor, as dihydrostreptomycin, like streptomycin, is excreted through the kidney. In the presence of poor renal function, an apparently safe dose of the drug may produce a dangerously high concentration of dihydrostreptomycin in the blood. Like streptomycin, dihydrostreptomycin may occasionally damage the auditory function and all patients who are being treated with this drug for prolonged periods should be carefully observed for evidence of such damage. Apparently the damage is usually in the higher frequencies and is of little clinical significance when it does occur.

Dihydrostreptomycin has proved to be of unique value in the treatment of patients who react to streptomycin with drug fever or skin rashes. Such patients have been treated with dihydrostreptomycin without recurrence of the allergic manifestations.

D.T.C.

DEFEAT OF REORGANIZATION PLAN NO. 1

IN AN EDITORIAL which appeared in our August issue, we gave a brief analysis of the report of the task force of the Hoover Commission on health activities of the federal government. We mentioned that in a supplemental report the task force strongly recommended that health activities of the government be made a separate department of the government headed by an M.D., with training for such a position. This

step has been favored by the medical profession for years.

President Truman submitted to Congress what is known as Reorganization Plan No. 1, providing for a Welfare Department to be headed by Oscar Ewing to include Social Security, Education and Health activities of the federal government. This would include not only the Public Health Service but numerous additional health activities now conducted by other departments. The health activities of the government would thus be under the control of the Secretary of the Welfare Department.

The defeat of Reorganization Plan No. 1 by the Senate on August 16, is a demonstration of what a determined medical profession can accomplish when convinced of the justice of their cause and the need for action.

Senator McClellan, Democratic Senator from Arkansas, was chairman of the Senate Committee which conducted the hearings of the committee and deserves much credit for the conduct of the hearings. A group of physicians in a number of western states deserve the credit for instigating the campaign in opposition to the proposed legislation. Dr. Brookshire, Secretary of the Arkansas State Medical Association, in conjunction with the presidents of the Texas, Oklahoma and Arkansas State Medical Associations, called a meeting in Denver of representatives of some western states. The upshot of this meeting was that all the State Medical Associations were called upon to send representatives to Washington to do what they could to block Plan No. 1. Executive Secretary R. R. Rosell was Minnesota's representative. Representatives from Arkansas, Oregon, California, Louisiana, Texas, Oklahoma, Kansas, Virginia and Minnesota braved the summer heat of Washington to explain to Senators in person the undesirable provision of Plan No. 1, that it is not what the medical profession nor the Hoover Commission had been advocating and the danger of putting an out-and-out socialist at the head of a department in which federal medical activities would have no chance for independent action. As a result, Reorganization Plan No. 1 was defeated in the Senate by a vote of 60 to 32.

As soon as the physicians throughout the country were appraised of the situation, a flood of telegrams was sent the Senate Committee members. It is well recognized that communications to our representatives in Congress have their ef-

fect, and this expression of opinion doubtless also had some effect. The Senate committee took action in opposition to Plan No. 1, and this action was confirmed by the Senate. Thanks of the profession go especially to the representatives of the State Medical Associations who at some sacrifice went to Washington and were apparently successful in obtaining the defeat of a bill, whose passage in some quarters seemed a foregone conclusion.

Our appreciation should be extended not only to Senator McClellan of Arkansas, but also to Senator Fullbright of Arkansas, Senator Hunt of Wyoming, and Senator Taft of Ohio. Not a little thanks is due to that little fire-eater, Marjorie Shearon, editor of *American Medicine and the American Scene* which she publishes on her own in the interest of private enterprise and honesty in government. Regrettably, our Senator Humphrey felt himself pledged to vote for Plan No. 1, and led the fight for the bill not only before the Senate Committee but on the floor of the Senate.

The Hoover Commission, after prolonged study, has made its report and has recommended that a separate Medical Department be formed, to be headed by an M.D. This meets the hearty approval of the medical profession and should be done.

MANAGEMENT OF DISEASES OF THE THORAX

(Continued from Page 902)

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WELFARE AND PUBLIC HEALTH LEGISLATION

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WELFARE LEGISLATION

1949 Session

Child Welfare

(1) *Chapter 39*—Amends Minnesota Statutes 1945, Section 260.01, to provide treatment facilities for a child "who because of erratic, unstable, or abnormal conduct appears to be emotionally disturbed and is, therefore, in need of psychiatric study, care, and treatment, and whose parents or guardian are unwilling or unable to provide him with such necessary care and treatment";

Section 2 of the amendment provides that these facilities shall be established at the Anoka State Hospital or the Hastings State Hospital.

(2) *Chapter 40*—Amends Minnesota Statutes 1945, Sections 256.01 and 393.07, authorizing the Director of Social Welfare to designate such county welfare boards as he may select to act as his agent in the placement of DSW wards in adoptive homes or for foster care.

(3) *Chapter 736*—Creates a commission to study the laws and court organization of Minnesota relating to juvenile courts, divorce, annulments, separate maintenance adoption, desertion, and non-support. The members of the Commission shall be appointed by the Governor and shall include leaders in the legal and social welfare professions, and members of the State Legislature.

(4) *Chapter 227*—Amends Minnesota Statutes 1945, Sections 257.03 and 257.04 to clarify the language requiring that any person placing, or who assists in placing a child in a permanent foster home must notify the Director of Social Welfare.

(5) *Chapter 400*—Amends Minnesota Statutes 1945, Section 259.03, as amended, to provide that in the case of the adoption of a minor who is illegitimate, consent must be had of his mother, and if she be under the age of 18 years, of her parents or guardian.

(6) *Chapter 466*—Amends Minnesota Statutes 1945, Section 144.176, regarding the adoption of a person born in a foreign country to permit the district court, upon evidence presented by the Division of Social Welfare from information secured at the port of entry, to make findings upon which the state registrar is to prepare a birth certificate.

(7) *Chapter 21*—Amends Minnesota Statutes 1945, Section 257.05 to permit the Director of Social Welfare, at his discretion, to authorize persons bringing children into the state for purposes of adoption to file a written guarantee of responsibility in lieu of the usual bond.

(8) *Chapter 32*—Amends Minnesota Statutes 1945, Section 256.93 by permitting the Director of Social Welfare to accept guardianship of all personal property of wards committed to his care, removing the previous limitation of \$1,000.

Public Assistance

(1) *Chapter 606*—Amends Minnesota Statutes 1945, Section 256.74, Subdivision 1, as amended by Laws of 1947, Chapter 192, to provide that there shall be no maximum limit upon the amount of assistance in ADC

cases, effective July 1, 1949. (The law now states only that the grant shall "provide such child with a reasonable subsistence compatible with decency and health.")

(2) *Chapter 677*—Amends Minnesota Statutes 1945, Section 256.15, Subdivision 2, as amended by Laws of 1947, Chapter 530, to increase the maximum Old Age Assistance grant to \$55 per month effective July 1, 1949, and to \$60 per month if and when the Federal government increases its financial participation in the Old Age Assistance program.

(3) *Chapter 420*—Amends Minnesota Statutes 1945, Sections 261.15, 262.01, 262.07, 262.13, 263.01 and 263.03, to make permissive the payment of poor relief in cash.

(4) *Chapter 341*—Amends Minnesota Statutes 1945, Section 256.36 by repealing provision that when an Old Age Assistance recipient moves to another county, the county of original grant may bill the county of present residence for one-sixth of the amount of any increase granted, and reinstates previous law so that county originally making the grant is responsible for full amount of the grant regardless of where recipient resides.

(5) *Chapter 534*—Amends Minnesota Statutes 1945, Section 256.51 as amended to remove the requirement that applicants for Aid to the Blind be more than eighteen years of age. (No limit as provision now stands.)

(6) *Chapter 711*—Amends Minnesota Statutes 1945, Sections 256.51 and 256.53 as amended by Laws 1947, Chapter 343, Sections 1 and 2. The personal property limitation for an applicant for Aid to the Blind is defined as "... not more than \$500 for a single person or \$750 for a married couple. Personal property shall include stocks and bonds, bank savings, farm machinery and livestock, land contracts, mortgages and cash value of life insurance policies. The first \$500 for a single person, or \$750 for a married couple, of sale value of clothing and household goods shall be disregarded in determining how much personal property is owned."

The maximum funeral allowance for deceased recipients of Aid to the Blind is increased to \$150.

(7) *Chapter 22*—Repeals Minnesota Statutes 1945, Section 248.07, subdivision 6. This section placed the administration of vocational rehabilitation activities for the blind in the Children's Bureau, a state administrative unit which no longer exists. (Vocational rehabilitation for the blind is administered in the Public Assistance Unit of the Division of Social Welfare.)

(8) *Chapter 509*—Amends Minnesota Statutes 1945, Section 261.07 to provide that in determining the legal settlement of a poor person, any time during which that person was committed to a public institution or hospital in another state shall be excluded in computing the period of absence from this state.

Tuberculosis

(1) *Chapter 731*—Amends Minnesota Statutes 1945, Sections 376.31 and 376.33 to increase state aid for the care of non-paying patients in county tuberculosis sanatoria to a maximum of \$7.50 per week.

Like benefits are provided for these counties not having

WELFARE AND PUBLIC HEALTH LEGISLATION

a tuberculosis sanatorium (using the facilities of the state sanatorium) through monies included in the Division of Social Welfare Appropriations Act, *Chapter 744* (H. F. 1835).

(2) *Chapter 96*—Provides that in tuberculosis sanatorium districts in which there is no longer a need for a sanatorium to care for persons living within the county or counties comprising the district, the sanatorium commission and the board or boards of county commissioners of the district may, with the approval of the Director of Social Welfare, discontinue the operation of the sanatorium, and sell or lease the property pertaining thereto.

(3) *Chapter 558*—Amends Laws of 1947, *Chapter 616* for the purpose of clarifying the language regarding the responsibility of the state toward TB sanatorium employees who contract tuberculosis. (ex: amendment defines "contracts tuberculosis").

(4) *Chapter 116*—Amends Minnesota Statutes 1945, Section 376.19 to permit the construction, improvement and maintenance of roads terminating at a county tuberculosis sanatorium (Not to exceed 5 miles from the site).

Miscellaneous

(1) *Chapter 744*—The Division of Social Welfare Appropriations Act, provides in part that state aid for welfare financing shall be extended to those counties in which the real and personal property valuation is less than \$7,000,000, and whose mill levy for welfare purposes exceeds the state average by 50 per cent or more but is insufficient to meet the county's welfare costs. Counties hereafter transferring monies out of their welfare funds are excluded from benefits. (Information as to the exact formula will be sent at a later date.)

(2) *Chapter 704*—Amends Minnesota Statutes 1945, Section 256.01 to empower the Director of Social Welfare to act as co-ordinator of activities relating to the Displaced Persons Program in Minnesota. This authority is to expire on June 30, 1951.

(3) *Chapter 681*—Amends Minnesota Statutes 1945, Section 350.11 to allow employees of the State and its political subdivisions a maximum of six cents per mile for the use of privately owned automobiles in the performance of official duties, effective July 1, 1949, and extending until July 1, 1951.

(4) *House Resolution Number 30*—Directs the Legislative Research Committee to undertake a study of the financial and social problems of needy Indians and the intergovernmental relationships between the various agencies working with them. The Committee's report is to be submitted at the next regular session of the Legislature.

In addition to the foregoing, a resolution was passed authorizing a committee of the Legislature to go to Washington to explain to responsible federal officials the problems particularly financial, of Minnesota Indians, and to urge the federal government to take steps to more adequately meet their needs. This Committee was appointed, and it completed its assignment in Washington early in the legislative session.

(5) *Chapter 618*—Amends Minnesota Statutes 1945, Chapters 261, as amended, 262, and 263; and amending

Minnesota Statutes 1945, Section 256.01, Subdivision 2 to enable the Director of Social Welfare to participate in agreements with the federal government if and when the Congress makes available new grants-in-aid for public assistance or other welfare purposes. (The primary purpose of this act was to permit Minnesota to take advantage of federal funds in the event that the Congress extends federal aid for general relief to the states before our next legislative session. However, the county system relief bill failed to pass.)

(6) *Chapter 228*—Amends Minnesota Statutes 1945, Section 256.02 to transfer all powers and duties of the Director of Social Welfare regarding the inspection and investigation of prisons, jails, and lockups to the Director of Public Institutions.

(7) *Chapter 81*—Permits courts to appoint a psychologist to assist the two licensed doctors in the examination of allegedly mentally deficient persons.

(8) The Legislature also made enactments designed to improve mental hospital conditions and to develop a mental health program in the state. Details regarding these acts may be obtained from the Division of Institutions. Youth Conservation activities were expanded. Specific information may be secured from the Youth Conservation Commission.

Resolutions

The Legislature also passed the following joint resolutions pertaining to welfare. These are merely legislative recommendations to the Congress, and are in no sense enforceable:

(1) *Resolution No. 7*—Memorializes the Congress of the United States to amend the Social Security Act to permit the federal government to share in grants paid to persons residing in public institutions.

(2) *Resolution No. 2*—Memorializes the President and the Congress of the United States to provide for the continued operation of the Indian school at Pipestone, Minnesota, and to reopen its hospital, which had already been closed.

(3) *Resolution No. 3*—Memorializes the Congress of the United States to amend the immigration laws to permit the adoption of European war orphans by American families.

PUBLIC HEALTH LEGISLATION

1949 Session

Animals, Use of—In promotion of scientific research and instructions in animal and public health. Live Stock Sanitary Board made the licensing agency. *Chapter 195*—S.F. 834, App. 3/26/49.

Boats, Safety of—Equipping with detachable anchor lines and elimination of annual issuance of metal boat tags using instead a tag to remain on boat until sold, taken out of service, or otherwise removed. *Chapter 655*—H.F. 1005, App. 4/25/49.

Cancer, Statistical Research—Authority given to Board to engage in; confidentiality of reports. *Chapter 350*—S.F. 1085, App. 4/9/49.

Prepared by the Minnesota Department of Health.

MINNESOTA MEDICINE

WELFARE AND PUBLIC HEALTH LEGISLATION

Civil Service—Allocations of positions in. Civil Service Director to make allocations where organizational structure changes in an agency, provides manner of appeals from allocations, et cetera. Chapter 646—S.F. 1081, App. 4/23/49.

Hospital Superintendents Registration Law—Moves up "grandfather clause" in 1947 law to October 1, 1949. Chapter 93—S.F. 121, App. 3/7/49.

Hospitals and Sanatoriums—Changes levy by boards of county commissioners for maintenance of county TB sanatoriums from three to five mills (Sec. 376.20). Chapter 29—S.F. 245, App. 2/18/49.

A Concurrent Resolution, No. 2—S.F. 286, memorializing President and Congress to continue operation of Pipestone Indian School and re-open Hospital at the school. App. 2/17/49.

With approval of Director of Social Welfare, sanatorium Commission and county board by resolution may cease operation of a sanatorium. Chapter 96—S.F. 319, App. 3/7/49.

Village with municipal liquor store may, with approval of voters, contribute "from village liquor dispensary fund toward the construction, maintenance and operation of a community hospital . . . for a period of four years thereafter . . . to any duly incorporated non-profit hospital association not to exceed \$4,000 . . . in any one year for construction and maintenance . . . and not to exceed \$1,000 in any one year for the operation thereof; and the hospital shall be open to all residents of the community on equal terms." Not applicable where average net earnings of store are less than \$8,000. Chapter 146—S.F. 194, App. 3/21/49.

Counties, cities and villages may accept gifts "to aid in building, acquiring, equipping and maintaining public hospitals. . ." Chapter 152—S.F. 464, App. 3/21/49.

Hotels—Fire prevention and fire protection duties transferred from Hotel Inspector to Commissioner of Insurance. Chapter 469—H.F. 1606, App. 4/16/49.

Indians—Joint Resolution: H.F. 1641: LRC to study problems of Indians; passed House 4/13/49.

Local Health Units—Amended (1) to provide for less than full time health officer, (2) to impose a one-mill tax limitation, (3) to require unanimous vote of county commissioners of a county which contains a city of first class if majority of county commissioner districts lie within such city, and (4) health officer to have approval of State Board of Health. Chapter 405—S.F. 352, App. 4/14/49.

Mental Health—The "Mental Health Policy" Act, makes the Division of Public Institutions the Mental Health Agency. Chapter 512—H.F. 1397, App. 4/20/49.

Mosquitos—Five per cent of voters may authorize organization of mosquito abatement districts; one mill limitation; Conservation and Agriculture must approve. Chapter 404—S.F. 236, App. 4/14/49.

Narcotic Drugs—Amidone, is obemidone, and ketobemidone to be added to list of. Chapter 360—S.F. 706, App. 4/11/49.

Nuisances, Abatement of—In cases where a health officer abates a nuisance because the property owner failed

to act, the previous law (Sec. 145.22) limited claim of the municipality against "any individual owner, or any one piece of property" to \$25.00. This amount has been changed to \$50.00. Chapter 80—S.F. 86, App. 3/4/49.

Pasteurization of Milk, Cream—No milk, or cream or fluid milk products to be sold unless pasteurized (casual sales on farms excepted). Chapter 403—S.F. 74, App. 4/14/49.

Retirement—State Employees—Amends Retirement Laws: (1) employees may retire at 58 after 20 years of service but retirement allowance shall be reduced $\frac{1}{4}$ of 1 per cent for each month that the employee is under age of 65. But allowance of any member entitled to 35 years' service credit is not subject to such reduction. (Sec. 12 (4)). Monthly allowance shall not exceed \$150.00, (2) employee at retirement may elect to take lesser retirement allowance payable during lifetime with provision for surviving spouse to receive a reversionary annuity of not less than \$120 per year "nor more than the amount of reduced retirement allowance to which the member may be entitled under his election." (Sec. 12 (5)), (3) on death of employee accumulated deductions are to be paid to beneficiary with interest 2% compounded annually. (Sec. 14 (1)), (4) tax levy for SERA fund to be increased from 4/10 to 8/10 of mill, (5) 60 per cent instead of 56 per cent of total deducted from salaries of employees paid from Federal grants is to be paid to fund (Sec. 8 (4)), (6) no deductions to be made from salaries on any amount thereof in excess of \$4,800 in any fiscal year, (Not of \$300 per month as at present) (Sec. 8 (2)), and (7) a state employee of five years or more who was a member of the Public Employees Retirement Association may obtain credit in SERA by paying to State fund sum equal to deductions at rate of 5 per cent on basis of salaries received from the political subdivision. Chapter 644—S.F. 853, App. 4/23/49.

Tuberculosis—To give health authorities means of isolating infectious TB patients who are recalcitrants; on Board of Health information that a person is in infectious stage county board may require law enforcement officer to visit and persuade person to enter a sanatorium. If persuasion fails, Board of Health can take matter to district court. A judge after hearing may direct the apprehension of person for confinement in a san. or hospital for examination to determine whether or not he is in infectious stage. Chapter 471—S.F. 14, App. 4/18/49.

Vital Statistics—Birth certificates for foreign born children adopted in Minnesota to be prepared where Court makes necessary findings; not to be evidence of citizenship. Chapter 466—H.F. 1560, App. 4/18/49.

We have learned that you cannot put a patient's mind in a cast. The great problem of the tuberculosis sanatorium is people leaving against medical advice. We have been foolish enough to expect patients to rest idly in bed and not to worry, but worries about families, jobs or money, go round and round in their heads until they decide to give up treatment and go home. HOWARD A. RUSK, M.D., National Foundation for Infantile Paralysis.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the

Minnesota State Medical Association

George Earl, M.D., Chairman

DEFEAT OF PLAN NO. 1 IMPORTANT MEDICAL VICTORY

Rejection of President Truman's Reorganization Plan No. 1 by an informed and responsible Senate represents an important retracing step in the headlong flight toward socialism that has too long marked this country's course.

The Plan, which would have garnered control of health, education and welfare into the hands of Oscar Ewing, federal security administrator, was well on its way to passage before the American people were aware of its significance. Doctors from Arkansas, Oregon, California, Minnesota, Louisiana, Texas, Oklahoma, Kansas and Virginia rushed to the nation's capitol to warn the solons against casting a vote for this thinly veiled attempt to socialize medicine. Thousands of letters and telegrams from an aroused public weighted the scales of senatorial opinion.

In the Senate chambers the fight was led by McClellan and Fullbright, Democrats from Arkansas; Hunt of Wyoming, another Democrat; and Republican Senator Taft of Ohio.

Said Senator Taft, August 15:

"In view of his (Ewing's) public statements and actions, there can be no doubt that he would completely subordinate health and education to welfare. Doctor Parran resigned as surgeon general and Mr. Studebaker as head of the Office of Education, largely because no independence was left to them in their proper functions."

Despite Truman's unwavering championship of the Reorganization Plan, his assertion that it carbon-copied the Hoover recommendations (whereas the Hoover commission had recommended an independent United Medical Administration) and his last-minute summons to six Democratic Senators the day before the vote, nevertheless sixty Senators, twenty-three of them members of the Democratic party, voted against the plan.

A telegram from Dr. Elmer L. Henderson, president of the AMA, and Dr. George F. Lull,

secretary and general manager, congratulated members of the "grass-roots lobby" for their part in the defeat of the plan:

"This victory was due to your magnificent support and intelligent efforts on behalf of the American people. The whole arsenal of bureaucracy and propaganda, including the White House itself, was unable to stop this triumph. It proves that the elected representatives of the people are responsive to enlightened opinion regardless of party politics or pressure. This is a significant test of medicine's strength in its fight to remain free."

HOOVER ADVOCATES "CRACKER BARREL" DEBATES

In the midst of the uproar, ex-President Hoover had a few incisive words to say on the occasion of his seventy-fifth birthday. "New government programs would require the spending of 75 to 85 per cent of people's savings," he pointed out, in an address broadcast from his alma mater, Leland Stanford University. "Sixty-one days of each year, we work for the government (in taxes)," he added, estimating an additional twenty days' pay a year from every individual if the government schemes go through.

Reminding his listeners that even now one out of every seven persons is a regular recipient of government money and that there is one government employe to every eight of the working population, Hoover warned that "We're on the last mile of collectivism."

He advised Americans to watch the manipulation of words and phrases to give them new meaning, citing as an example the deceptive phrase "deficit spending." In his opinion, debates like those traditionally held around the cracker barrels of the corner grocery stores would be wise. "In that atmosphere, phrases and slogans can be dissolved into common sense and intellectual integrity."

"BRIBERY" CHARGE TYPICAL OF SOCIALISM EXPONENTS

The exponents of socialized medicine are hard-pressed to find any grounds for their campaign

to put the health of the nation under government control. Just how desperate they are, as a rising tide of public opinion makes compulsory health insurance less and less likely, was evidenced by an August 9 publicity release from the Committee for the Nation's Health.

"The wording of the resolution (on advertising) made it clear that the sacrifice of medical ethics was being offered as an open bribe to the press of the state."

Thus was quoted Chet Paterson, executive director of the Committee for the Nation's Health, in speaking of the resolution on advertising passed by the Minnesota State Medical Association's House of Delegates, May 9.

The release was seized by Nathan Robertson of the *CIO News* who began his story:

"Minnesota doctors and newspaper editors have worked out a secret deal—under which the doctors have dropped their long standing ethical rule against advertising in return for a 'closer understanding with the press'—which amounts to bribing the press to fight President Truman's health insurance program."

Quoted as evidence of the "deal" was part of an editorial from the *St. Cloud Times* which advocated "a working arrangement between the medical profession and the press." The Committee for the Nation's Health pointed out that the editorial referred to the advertising arrangement; but the editorial actually went on to say:

"Moderate, well-timed and impersonal publication of news stories . . . would add to the reputation and professional stature of St. Cloud as a great medical center. This is more than medical advertising. It is an opportunity for public relations at its highest level."

This self-explanatory statement was omitted from the Committee's release, for obvious reasons.

Resolution a Guide

The much-maligned resolution actually was set up as a guide for activities that have been carried on for a period of more than ten years. As doctors know, most county medical societies permit the publication of small professional cards in local newspapers. Also doctors, as citizens of their communities, are expected to join in the promotion, by way of sponsoring advertisements which explain the campaign, of such drives as the Red Cross, Community Chest, et cetera. In recent years several medical societies have been buying space to explain the dangers of compulsory health insurance proposals.

A *Minneapolis Tribune* editorial phrased it:

"Action of the house of delegates clears the way for county medical societies to buy newspaper ads in order to present their side of the health insurance debate. This they have every right to do, as editors pointed out a state-wide medical-press conference April 8. Purchase of newspaper advertising space, however, in no sense constitutes a subsidy. Such space is available to all reputable advertisers, including doctors and medical societies or any other group wishing to support or oppose socialized medicine. Nor does purchase of advertising space include the right to dictate editorial policy of the newspaper."

"Deliberate Campaign"

The *Tribune* concludes its summation with:

"Just why the Committee for the Nation's Health . . . should want to hold up Minnesota doctors and editors as horrible examples to the nation is hard to understand. Its accusation has all the earmarks of a deliberate campaign to smear editors opposing Mr. Truman's health scheme."

The *St. Paul Dispatch* view parallels this, refers to the news release as "Based either on a deliberate effort to misrepresent or an inexcusable failure to understand. . . ."

Editorial wrath was boiling into print all over the state as the Committee's ridiculous charges became circulated. Among the more vehement was the *Maynard News* which stated:

"There seems to be no limit as to how far the CIO leadership will go to set one class against another in order to accomplish certain political and economic objectives."

"The same clique of rabble rousers that protest so loudly against race prejudice are energetically promoting class prejudice."

"The medical men and the editors of Minnesota's newspapers are the latest targets for their poison pen activities."

* * *

"Almost without exception, the editors of Minnesota are opposed to any legislation which will result in socialized medicine. They do not need bribes to prompt them to editorialize against compulsory health insurance or socialized medicine. They have received no bribes!"

"The insinuation of the *CIO News* is an insult to the editorial and medical profession and will long be remembered."

AMA SCORES MISUSE OF ITS 1939 STATISTICS

One of the most frequently repeated assertions in the tottering defense of compulsory health insurance is a twisted version of 1939 American Medical association statistics on ability to pay for medical care. The misrepresentation appears this way in Ewing's *The Nation's Health*:

"As long ago as 1939, the American Medical association estimated that an income of \$3,000 a year was not adequate to pay the costs of a major or chronic illness. Since then, the consumers price index has risen approximately 75 per cent. A family would need take-home pay of more than \$5,000 to have the same spending power that \$3,000 gave in 1939. Nearly 80 per cent of our

MEDICAL ECONOMICS

families earn less than \$5,000 and consequently would have difficulty meeting the costs of a serious or prolonged illness."

With their reinforcements crumbling badly, the socializers are faced with another inroad of facts as the AMA scores this flagrant misuse of ten-year-old statistics.

States the AMA in a brief pamphlet reprinted from *The Journal*:

"With the coming of Blue Cross and Blue Shield insurance plans and those developed by the insurance companies, the test of inability to pay has been utterly and completely changed. The emphasis today in the purchase of medical care is on prepayment, as contrasted with the concept of postpayment of former times. The test of the ability to pay for the type of medical care covered by Blue Cross and Blue Shield policies, especially in the case of major illness . . . is the ability of a family to prepay the premium for a combined Blue Cross-Blue Shield hospital and medical insurance policy for the entire family. The cost of this family policy is the price of a package of cigarettes, a bottle of beer or a gallon of gasoline a day. In other words, any family that cannot prepay about 20 cents a day . . . may be considered medically indigent in 1949 with respect to the medical care provided under these policies. Before the development of voluntary insurance plans, the test of the ability to pay medical care bills ran up to several hundred dollars—the cost of postpayment in a lump sum or in installments. As long as the American people continue to choose to pay half again as much for recreation as they do for all types of medical care and choose to spend as much for jewelry and watches, more for personal care and twice as much for tobacco as they pay for their physicians, the advocates of socialized medicine in 1949 will be hard pressed to use the setting of the 1930's, even using \$5,000 instead of \$3,000 as the income level, for measuring or computing the proportion of the population which cannot prepay the cost of medical care. The ability to 'prepay' and 'postpay' are simply two different ideas of two different decades."

OFFICIAL REPORT OF HEALTH ASSEMBLY PUBLISHED

The official report of the National Health Assembly is now available in book form. Oscar Ewing, who attempted to use the Assembly as a stepping stone to medical dictatorship, writes a verbose introduction to the book. Emphasizing the areas of agreement which the Assembly found, he had to admit that they did disagree on one small point: the matter of payment for medical care!

RADIO COMMENTATOR HITS TRUMAN SPENDING

Phelps Adams, replacing Fulton Lewis, Jr., during the latter's vacation, gave listeners to the program a new slant on government spending, July 25. He said:

"Compared to Harry Truman, Franklin D. Roosevelt was a nickel-nursing tightwad—incredible as it

seems. During his three terms in office, Mr. Roosevelt had to pay virtually the entire combat cost of World War II . . . and he spent thirty-one billion dollars a year. That's billions with a capital B. But Harry Truman during his four, almost completely postwar peacetime years has spent one and a half times as much each year as Mr. Roosevelt did."

By way of comparison, Mr. Adams recounted the spending of George Washington's administration:

"He spent \$4,000,000 a year. . . . Now the country, of course, has grown enormously since George Washington took office 160 years ago. It has grown in size, in population, and in wealth; but believe you me, nothing about this country has grown so fast and so much as the United States Treasury.

"Geographically the United States with all its possessions and territories is today about four times as big as it was in Washington's day. It has forty times as many people. And the combined income of all those people together—is 400 times what it was back there in 1789. But today the United States treasury under Mr. Truman, is spending nearly 11,000 times as much as Washington did. That's a lot of times."

Communication

To The Editor:

We noted in reading an editorial on chloromycetin which appeared in the July, 1949, issue of *MINNESOTA MEDICINE*, the statement is made that chloromycetin has been found to be of value in brucellosis but not in typhoid fever. Although we are not familiar with the clinical use of this drug in typhoid fever from personal experience, there have recently been reports of dramatic improvement following its use, and the hope has been held out that chloromycetin is a specific of great value in treating typhoid fever. These reports appeared in the *Annals of Internal Medicine*, 1948, Vol. 29, page 131, authors Woodward, Smadel, Ley, Green and Mankihar; and another report by Bradley which appeared in *The Lancet* for May 21, 1949.

Very truly yours,

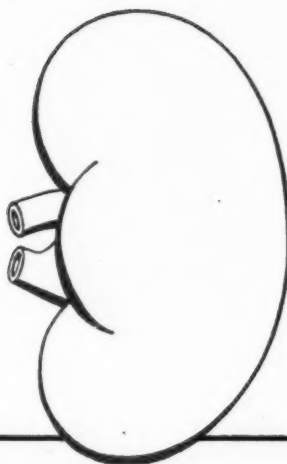
D. S. FLEMING, M.D., Chief
Section of Preventable Diseases

Chronic senile phthisis is a condition which may drag on for years unsuspected, and the patient may come to be regarded as just another chronic bronchitic. The patients and their relatives are often so accustomed to their symptoms, and have had so little help from medicine, that they are averse to again visiting their doctor for a detailed overhaul, and the true state of affairs is only brought to light when some young member of the family develops acute tuberculosis, possibly meningitis, and all contacts are reviewed. Then the damage is done; for the sputum of the supposed chronic bronchitic is found to be loaded with tubercle bacilli.—W. A. LISTER, M.D., *The Lancet*, April 30, 1949.

MINNESOTA MEDICINE

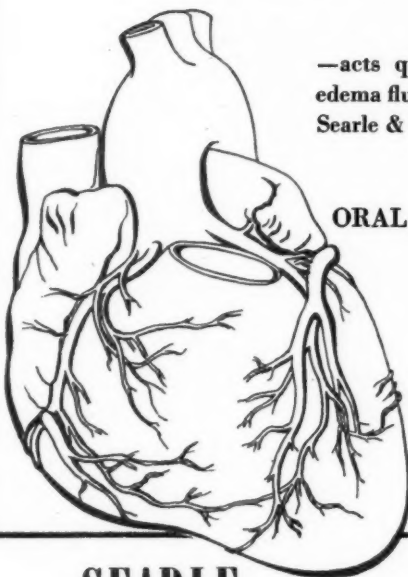
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*Searle Aminophyllin contains at least 80% of anhydrous theophylline.

SEARLE RESEARCH IN THE SERVICE OF MEDICINE

1. Brown, W. E., and Bradbury, J. T.: The Effectiveness of Various Diuretic Agents in Causing Sodium Excretion in Pregnant Women, Am. J. Obst. & Gynec. 56:1 (July) 1948.

In Memoriam

LYLE CHOLWELL BACON

Lyle Cholwell Bacon was born at Niles, Michigan, in 1866, descendant of a long line of early American settlers and pioneers. He was the son of Cyrus Bacon, Jr., a Major in the Medical Corps of the U.S. Army during the Civil War.

Due to the untimely death of his father he spent his early years in restricted circumstances. He was able to finish high school and come to Saint Paul about 1886, where he secured employment on the *St. Paul Pioneer Press*. After several years of steady work supplemented by summer employment, he was able to finish medical school, graduating from the University of Michigan at Ann Arbor in 1890. He was senior president of his medical class and all-time president of the class alumni. He served a short internship at the University Hospital and moved to Saint Paul where he was appointed professor of obstetrics and gynecology at Hamline University medical school. This office he retained until the school was merged with the University of Minnesota medical department some years later.

Dr. Bacon practiced in Saint Paul for fifty-eight years. He was a member of the Ramsey County Medical Society, Minnesota State Medical Association, American Medical Association, and the Minnesota Academy of Medicine.

Because of advanced years, he retired in February, 1948, and lived quietly until June 4, 1949. On this date he died peacefully from cerebral hemorrhage.

He is survived by his wife, Alice Kay Bacon, and four children: Mrs. Howard Y. Williams of Saint Paul, Dr. D. K. Bacon of Saint Paul, Dr. Lyle C. Bacon of Los Angeles, California, and Mrs. Frederick B. Hutt of Ithaca, N. Y.

JAMES H. BAKER

James H. Baker, Saint Paul, died at his home in Saint Paul July 31, 1949.

At the time of his retirement two years ago, Mr. Baker was executive secretary of the Hennepin County Medical Society. Previous to that, he was Sunday editor of the *Minneapolis Tribune* for many years.

Mr. Baker was born in Mankato, Minn., and graduated from University of Minnesota in 1913. He covered General Pershing's expedition into Mexico in pursuit of Pancho Villa for the *Minneapolis Tribune* in 1916.

During World War I he served with the Norton-Hardjes ambulance corps and later became a lieutenant in the French artillery. He was decorated by the French and Italian governments.

Mr. Baker is survived by his wife, a daughter, Mrs. Hamilton Ross, and a son, Bartlett, all of Saint Paul.

OSCAR L. BERTELSON

Dr. Oscar L. Bertelson of Crookston died suddenly July 14, 1949, at his home. He was a former resident of Fergus Falls.

Dr. Bertelson was born at Fayette, Iowa, October 25, 1878. He obtained his medical degree at the University of Minnesota Medical School in 1900 and took eight months of postgraduate work at the New York Ophthalmic College. He practiced for two years at Beltrami before locating at Crookston.

Dr. Bertelson specialized in eye, ear, nose and throat diseases. He was a Division Surgeon for the Great Northern Railway for many years. He was a member of the Crookston Elks lodge and a member of the Red River Valley Medical Society, the Minnesota State and American Medical Associations.

Dr. Bertelson was married to Bertha Asseln, who preceded him in death in December, 1948. Because of ill health he had not been active in his profession for several years.

FAYETTE DWIGHT KENDRICK

Dr. F. D. Kendrick, St. Paul, died August 24, 1949, at the age of ninety-three.

Dr. Kendrick was born November 29, 1856, in Dreden, Michigan. He graduated from the University of Michigan Medical School, Ann Arbor, in the same class with Dr. William J. Mayo. He practiced homeopathy at Bismarck, North Dakota, in the horse and buggy days before coming to St. Paul in the early nineties.

On October 10, 1893, he married Sarah Kirk Stees of St. Paul and moved into the Stees mansion, at 488 Grand Avenue, built by Colonel Heather in the sixties. There he has since lived but did not practice his profession, devoting his time to hunting and fishing, to playing the violin and piano, and to inventions, some of which he patented. Mrs. Kendrick died in 1930.

Dr. Kendrick is survived by one daughter, Mrs. Isabelle Kutill of Chicago, and two grandchildren, Kendrick J. Kutill and Sally A. Kutill, also of Chicago.

VERNON JOHN TELFORD

Dr. Vernon John Telford of Litchfield, Minnesota, died on July 18, 1949, in Eitel Hospital, Minneapolis. He was stricken with a heart attack while driving to Minneapolis.

Dr. Telford was born in Pipestone, Minnesota, July 15, 1899. He obtained a B.S. degree from Hamline University and his M.D. degree from the University of Minnesota Medical School in 1929. After internship at St. Mary's Hospital, Duluth, he practiced at Edgerton, Minnesota, from 1930 to 1931, and had practiced eighteen years in Litchfield.

Dr. Telford was a member of the Meeker-Kandiyohi-Swift County Medical Society, the Minnesota State and American Medical Associations.

(Continued on Page 934)



★ *Epileptic Men of Genius* ★

The brilliant English poet, Lord Byron, who had many mild convulsive attacks during his short life, is an outstanding example of the fact that epilepsy need not cloud a man's mentality.

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SURGERY—Intensive Course in Surgical Technique, two weeks, starting September 26, October 24, November 28.

Surgical Technique, Surgical Anatomy and Clinical Surgery, four weeks, starting September 12, October 10, November 7.

Surgical Anatomy and Clinical Surgery, two weeks, starting September 26, October 24, November 21.

Surgery of Colon and Rectum, one week, starting October 10, November 28.

Esophageal Surgery, one week, starting October 10.

Thoracic Surgery, one week, starting October 3.

Breast and Thyroid Surgery, one week, starting October 10.

Fractures and Traumatic Surgery, two weeks, starting October 3.

GYNECOLOGY—Intensive Course, two weeks, starting September 26, October 24.

Vaginal Approach to Pelvic Surgery, one week, starting September 19, November 7.

OBSTETRICS—Intensive Course, two weeks, starting September 12, November 7.

MEDICINE—Intensive General Course, two weeks, starting October 3.

Gastroenterology, two weeks, starting October 24.

Gastroscopy, two weeks, starting September 26, October 24.

DERMATOLOGY—Formal Course, two weeks, starting October 24. Informal Clinical Course every two weeks.

ROENTGENOLOGY—Diagnostic and Lecture Course first Monday of every month.

Clinical Course third Monday of every month.

X-Ray Therapy every two weeks.

UROLOGY—Intensive Course, two weeks, starting, September 26.

Ten Day Practical Course in Cystoscopy every two weeks.

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(Continued from Page 932)

JACOB JOHN WESTRA

Dr. Jacob John Westra died July 17, 1949, in Champaign, Illinois.

Dr. Westra was born on March 2, 1908, at Grand Rapids, Michigan. He received the degree of A.B. in 1929 from Calvin College, the degree of Ph.D. from the University of Chicago in 1931 and the degree of M.D. from Rush Medical College, University of Chicago in 1936; he was intern for one year and resident for two years at Presbyterian Hospital in Chicago.

Dr. Westra entered the Mayo Foundation as a fellow in medicine on April 1, 1938, and remained until October 1, 1939, at which time he went to Owatonna, Minnesota, where he practiced until 1941. He then went to the Muncie Clinic, Muncie, Indiana. In 1944 he went to Champaign where he practiced until the time of his illness this summer.

He was a diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, and a member of the American Medical Association, the Illinois State Medical Society, Alpha Omega Alpha, Sigma Xi and the Champaign County Medical Society of which he was secretary in 1949.

Senator Taft said that the doctors have long wanted an independent Department of Health. He has believed that an Under Secretary such as is suggested by S.140 of the 80th Congress would be a fair compromise and would accomplish the desired results. However, the doctors' viewpoint has been upheld by the Hoover Commission which suggested the establishment of a United Medical Administration.

He stated, further, that Plan No. 1 does not follow the Hoover Commission, but instead places full power in the Secretary of Welfare. While some of its proponents suggest that this is only a temporary arrangement and that they will later look into the medical phase, this is certainly not the view being taken by the present Administrator. Senator Taft said, "If Plan No. 1 goes into effect, there will never be a United Medical Administration." He stated that he opposes Plan No. 1 because it completely subordinates health and education to welfare and because it fails to follow the Hoover Commission.

A.M.A. Bulletin No. 25

"If I am sick, I really want someone to look after me. If I am about to die, I want to make sure that I am given every chance the medical profession can offer me.

"I do not want someone, whose salary goes on whether I live or die, making a casual observation. I do not for a moment question the ethical attitudes of the medical profession either under socialized medicine or in private practice.

"But boy, oh boy, I sure do question human nature and am fearful of it. If you take the incentive of building a private practice or of sustaining a reputation away, I am afraid the socialized doctor is liable to relax and rest on his oars."—DANN O. TABER in *The Athens (Ohio) Messenger*.

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◆ Reports and Announcements ◆

FALL CLINICS

The division of social welfare Medical Services Unit, Crippled Children Services, announces the following Fall Clinic Schedule for 1949:

Winona	September 10	Central School	Winona Wabasha Olmsted Fillmore Houston
Fergus Falls	September 17	High School	Ottertail Wilkin
Bemidji	September 24	High School	Beltrami Clearwater Hubbard
Little Falls	October 1	High School	Morrison Todd Mille Laacs St. Louis
Virginia	October 15	Technical High School	
Crookston	October 22	Crookston High School	Polk Mahnommen Norman
Willmar	October 28 (Friday)	Auditorium	Swift Kandiyohi Chippewa Renville Meeker McLeod
Marshall	October 29	High School	Lyon Lincoln Redwood Yellow Medicine Lac Qui Parle Blue Earth
Mankato	November 5	Franklin	Sibley Nicollet LeSueur Watsonwan Brown Waseca Martin Faribault

AMERICAN ACADEMY OF PEDIATRICS MINNESOTA CHAPTER

Approximately twenty Minnesota pediatricians attended an organizational meeting of the Minnesota Chapter of the American Academy of Pediatrics in Duluth on August 6.

Dr. R. E. Nutting, Duluth, was elected president of the chapter. He had served as chairman of the state Academy membership prior to the formal organization.

Other officers elected at the meeting are Dr. L. F. Richdorf, Minneapolis, vice president; Dr. H. F. Flanagan, Saint Paul, secretary-treasurer; and Dr. R. L. J. Kennedy, Rochester, and Dr. E. D. Anderson, Minneapolis, fellows-at-large.

The Minnesota membership in the American Academy of Pediatrics totals forty-five.

AMERICAN COLLEGE OF CHEST PHYSICIANS POSTGRADUATE COURSE

The fourth annual postgraduate course sponsored by the American College of Chest Physicians will be held at the St. Clair Hotel, Chicago, September 19 through 23.

The course will consist of addresses by specialists in chest diseases and related fields. Round-table luncheon

meetings will also be held. The principal speaker at a dinner on the evening of September 22 will be Dr. Andrew C. Ivy, vice president of the University of Illinois College of Medicine.

Those interested should apply to the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois, remitting the registration fee of \$50.

MILITARY MEDICAL CONVENTION

Under the auspices of the Twin City Medical Department Reserve Officers a Convention on Military Medicine will be held at the University of Minnesota, October 7 and 8, 1949. Attendance at this convention is urged for all Medical Reserve Officers as well as all other doctors interested in the subjects to be presented and in Military Reserve matters.

Program Outline October 7

A.M.

11:30 Staff Meeting and Luncheon. Powell Hall.

P.M.

12:30 Registration. Museum of Natural History.

1:30 Movies: The Atomic Bomb. Museum of Natural History.

3:00 Lecture: Antibiotics, Wesley W. Spink, M.D., Museum of Natural History.

6:30 Dinner: Radisson Hotel. Speaker: From the Office of the Surgeon General: Hiroshima, 1945-1949.

October 8

A.M.

8:00 Clinical demonstrations at various hospitals to be announced; emphasis on various medical and surgical specialties.

P.M.

1:00 Minnesota-Northwestern football game.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

This year's 116th Meeting of the American Association for the Advancement of Science in the Pennsylvania Zone hotels of New York City, December 26-31, 1949, is expected to have the largest attendance in the Association's 101-year history. All seventeen sections and subsections of the AAAS and some fifty-three affiliated societies will have programs. Among these are included four sessions of papers on research in medicine, to be held in the Statler Hotel, Wednesday and Thursday, December 28 and 29. These sessions are under the sponsorship of AAAS Section N, of which Dr. Gordon K. Moe, University of Michigan, is secretary. One of the several speakers who will assure an outstanding program for these meetings is Dr. Alan Gregg, Chairman

(Continued on Page 938)

A WORD OF GRATITUDE ON OUR 40th ANNIVERSARY



MUDCURA SANITARIUM

Member of American Hospital Association

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SHAKOPEE, MINNESOTA

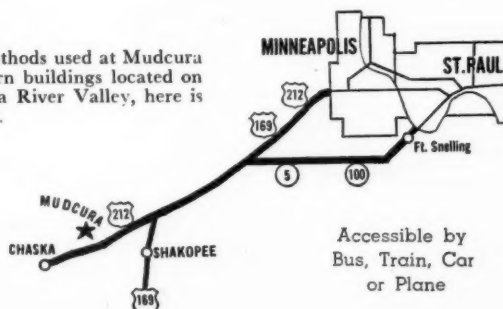
We wish to take this means of expressing our appreciation to hundreds of physicians for their splendid support and cooperation during the past forty years. Support and cooperation which has enabled Mudcura Sanitarium to grow into one of the leading accepted hospitals in the Northwest for the treatment of arthritis and related conditions. The hospital of today is a monument to the foresight and ability of the late H. P. Fischer, M.D. Today, Mudcura Sanitarium is a modern 100-bed hospital, with a complete physiotherapy department. Also equipped with modern laboratory and X-ray facilities. Roy T. Pearson, M.D., and B. F. Pearson, M.D., are staff physicians. The hospital employs about fifty people, including a technician and dietitian, masseurs, masseuses and nurses. Endorsed by the Carver-Scott County Medical Society and Licensed by the State Board of Health, Mudcura Sanitarium is also a member of the American Hospital Association and approved by the American Medical Association.

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MUDCURA SANITARIUM SHAKOPEE, MINNESOTA

J. H. FISHER, Adm.



REPORTS AND ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

(Continued from Page 936)

of Section N and Director of Medical Science, Rockefeller Foundation.

Physicians interested in scientific research or in the broader aspects of science are invited to join the Association and attend the meeting. Those interested may obtain application cards by writing the American Association for the Advancement of Science, 1515 Massachusetts Avenue, N. W., Washington 5, D. C. Membership dues are \$6.50, which entitles the member to the weekly, *Science*, or the monthly, *Scientific Monthly*. An additional \$3.50 brings both journals.

WINONA COUNTY SOCIETY

A meeting of the Winona County Medical Society was held in St. Charles on July 18. The scientific portion of the meeting was preceded by a dinner attended by forty-four physicians and wives.

Two new physicians in the area, Dr. Norbert P. Blochowiak of Rushford and Dr. Roger F. Hartwich of Winona, who were applying for membership in the group, were introduced at the meeting. During the scientific session a motion picture on cancer was shown by Dr. Hilmar Schmidt, Winona. A discussion of staff problems and public health program was conducted, and a committee on public relations was appointed, consisting of Dr.

R. H. Wilson, Dr. P. A. Mattison and Dr. Herbert Heise, all of Winona.

The society will hold its next meeting in Minnesota City on October 1.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

At the meeting of the Minnesota Society of Neurology and Psychiatry to be held Saturday, September 17, 1949, in Duluth, the program will be as follows:

Morning Session—10:00 a.m.

St. Mary's Hospital

The Szondi Test—L. E. SCHNEIDER, M.D.

Tumors In and About the Third Ventricle; An Analysis of Surgical Treatment—G. J. STREWLER, M.D.

Prefrontal Lobectomy; A Follow-up Study of Thirty-five Cases—J. E. HAAVIK, M.D.

Neurological Problems; Three Cases Illustrating Difficulties Encountered Because of Misleading History—C. M. JESSICO, M.D.

The Problem of Alcoholism—L. R. GOWAN, M.D.

Luncheon—12:30 p.m.

Kitchi Gammi Club

Afternoon Session—2:00 p.m.

Deep sea fishing on the North Shore

LEO. G. RIGLER LECTURE

Dr. John Caffey, associate professor of pediatrics in the College of Physicians and Surgeons at Columbia University, New York, will present the annual Leo G. Rigler lecture at the University of Minnesota medical school Wednesday, November 2, at 8:15 p.m.

Dr. Caffey will speak on the subject "Some Normal Variations in the Growing Skeleton: Their Clinical Significance." He will speak in the auditorium of the Minnesota Museum of Natural History.

Associate pediatrician and roentgenologist at the Babies' Hospital and Vanderbilt Clinic, New York City, Dr. Caffey also is consulting pediatrician at the Grasslands Hospital, Westchester County, N. Y., and the Yonkers General Hospital, Yonkers, N. Y.

OCCUPATIONAL AND PHYSICAL THERAPY COURSE

Dr. H. D. Bouman, Professor of Physical Medicine, University of Wisconsin Medical School, Madison, Wisconsin, will participate as a visiting faculty member in a continuation course in Occupational and Physical Therapy to be presented at the University of Minnesota, October 13 and 14. The course is intended for occupational and physical therapists. Dr. Bouman will speak on the subjects, "Physical Medicine and Geriatrics" and "Rehabilitation of the Neurological Patient."



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AUXILIARY EDITOR CALLS FOR NEWS

Mrs. S. N. Litman

The editors of MINNESOTA MEDICINE are reserving this generous section of the magazine for Auxiliary news each issue—news which will be of great interest to all members.

Information about local meetings, programs and Health Days, as well as articles on newly organized Auxiliaries and plans for the coming year will be especially appreciated.

News of this type should be mailed before the tenth of the month to Mrs. S. N. Litman, 4806 West Seventh Street, Duluth 7; while the chatty notes concerning members may be sent to Mrs. Leonard Arling, 2310 East 43rd Street, Minneapolis.

PR WORKSHOP WILL FEATURE EDITOR'S TALK

Mrs. Reuben Erickson

Max F. Ninman, editor and publisher of the Reedsburg, Wisconsin, *Times*, will be the banquet speaker for the second annual Women's Auxiliary Public Relations Workshop at the Radisson Hotel, September 22. Mr. Ninman is past president of the Wisconsin Press Association and will discuss community responsibilities of the doctor and the doctor's wife.

The day-long program, which begins at 9 a.m. with registration will include the following:

J. S. Jones, Minnesota Farm Bureau, speaking on the general threat of socialism; A. E. Cardle, M.D., chairman of the MSMA Health Education Committee, the transition from planning to action in the Minnesota program; Miss Mary McGinn, director, Woman's Division of Whitaker & Baxter, the national campaign; Kenneth Wunsch, publicity director, Northwestern National Life Insurance Company, distribution of literature, press relations.

P. Kenneth Peterson, state representative, the public platform, speakers' bureau; Arleth Haerberle, Radio Station WTCN, radio; Edwin Lewis, Associate Professor of Economics and Marketing, University of Minnesota, contacting individuals and groups; Mrs. Harold Wahlquist, national Auxiliary vice president, Health Days.

Several other speakers have not yet confirmed their appearance on the program, but the program will be directed toward a complete presentation of public relations techniques and objectives.

During the afternoon session there will be health movies shown by Mrs. Netta W. Wilson, senior health information consultant at the Minnesota Department of Health. Mrs. Wilson will also distribute lists of films available to Auxiliaries for showing in local communities.

Following last year's Workshop pattern, there will be roundtable discussions of Auxiliary organizational ac-

tivities. Three roundtables have been scheduled: county presidents, county treasurers, and legislative and public relations programs.

The fall board meeting will be held Friday morning, in the Italian room of the Radisson. A block of rooms has been set aside at the hotel for the convenience of those out-of-town members who wish to spend the night.

VACATIONS OVER, FALL PLANS WILL BEGIN

Mrs. L. Raymond Scherer

With summer vacations ending, Woman's Auxiliary plans will be gaining headway for next year. Despite the indications that compulsory health insurance is a dead issue, this ten-year-old menace will, according to most observers, be resurrected in the next congressional session.

The four-point program developed for Woman's Auxiliaries by Whitaker & Baxter includes: endorsement drive, participation in speakers' bureaus, distribution of literature and the placing of material in the women's sections of local newspapers. Miss Mary McGinn, director of Witaker & Baxter's Women's Division, points out that each area should select the phases of the program most appropriate and concentrate on them. A forthcoming plan of action will soon be available in printed form for Auxiliary use.

PERNICIOUS ANEMIA

(Continued from Page 891)

with chronic lymphatic leukemia desperately ill with symptomatic hemolytic anemia two years ago was subjected to splenectomy and is still vigorous and operating his farm.

There is great controversy at the present time regarding the exact manner in which the spleen exerts this destructive effect. One school believes that the spleen is of the origin of an antigen in these instances, and that the whole process is an example of an immune body mechanism, similar to mis-matched transfusions; another feels that the enlarged spleen has simply a greater area in which to perform its usual "grave-yard" functions. But, whatever the cause, it is obvious that its recognition is of considerable importance, since the relatively simple operation of splenectomy produces such spectacular improvement in them.

In closing, I think it is fair to say that hematology has kept abreast, at least, with other medical fields, in the scope and interest of its advances.

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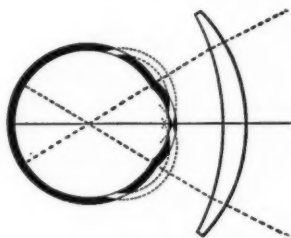
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◆ Of General Interest ◆

A million-dollar damage suit has been filed in the United States District Court by Dr. N. R. Brewer, a lecturer in physiology and director of the animal quarters at the University of Chicago. The suit was filed against the Hearst Publishing Company, Inc., publisher of the *Chicago Herald American*, and William Randolph Hearst of San Simeon, California. Pictures published of Dr. Brewer holding dogs which were described as tortured and tormented, and references to Dr. Brewer as a torturer, a sadist and a cruel experimenter, formed the basis for his suit.

Another million-dollar libel suit was filed ten days earlier by Dr. Virgil H. Moon, of Wake Forest College School of Medicine in North Carolina against the same defendants for misrepresenting his views on animal experimentation in the May 24 and May 29 issues this year. A similar article had been published on August 27, 1944, which falsified statements Dr. Moon had made in an interview. Efforts on the part of Dr. Moon for the past five years to have the newspaper correct the misrepresentation have been in vain.

Dr. Anton J. Carlson, president of the National Society for Medical Research, in announcing the two suits, stated that no campaign in our century has continuously carried as much irresponsible lying, maliciousness and defamation as the one aimed at the doctor and medical science researcher by the so-called anti-vivisectionists. The researchers are now organized as the National Society for Medical Research to actively combat this unjustifiable misrepresentation.

* * *

Dr. Albert V. Stoesser and Dr. Lloyd S. Nelson are now associated in the practice of allergy and pediatrics at 1409 Willow Street, Loring Park, Minneapolis.

* * *

On August 8, Dr. J. Webster Raattama joined the staff of the Adams Clinic in Hibbing. Dr. Raattama, a graduate of the University of Minnesota Medical School who served his internship at Columbia Hospital in Milwaukee, will practice in Nashwauk and Keewatin offices.

Dr. M. F. Hayes, who previously practiced at Nashwauk and Keewatin, has retired from the organization.

* * *

After practicing at Wanamingo for the past two years, Dr. Clifford N. Rudie became a staff member of the St. Peter State Hospital on August 1. Dr. Rudie previously practiced medicine in Los Angeles for five years and in Kenyon, Minnesota, for ten years.

* * *

The Alvarenga Prize has been awarded to Dr. Owen H. Wangenstein, director of the department of surgery at the University of Minnesota, by the College of Physicians of Philadelphia for his contributions to the etiology and therapy of gastric and duodenal ulcers. The prize was established under the will of Pedro Francisco Da Costa Alvarenga of Lisbon, Portugal, an

associate fellow of the College of Physicians of Philadelphia, and is awarded annually on the anniversary of his death, July 14, 1883. Dr. Wangenstein will deliver the Alvarenga Lecture before the College on November 2.

* * *

Dr. Bernard P. Strouth, who practiced in Dubuque, Iowa, during the past year, has moved to Council, Idaho, to be associated in practice with a physician there.

* * *

It was announced on July 24 that Dr. Charles L. Sherman of Luverne had been elected president of the Northwestern Minnesota Tuberculosis Sanatorium board for the thirty-fifth time. First elected to the position in 1914, Dr. Sherman has been head of the board continuously since then.

* * *

In July, Dr. James A. Cosgriff, Jr., became associated in practice with his father, Dr. J. A. Cosgriff, and Dr. J. J. McLeod, Jr., in the Olivia Clinic. A graduate of the University of Minnesota Medical School, the younger Dr. Cosgriff served his internship at St. Mary's Hospital in Duluth. He recently completed two years of naval service, being stationed part of the time at naval bases on Attu and Kodiak, Alaska.

* * *

A three-week vacation tour through the Northwest was taken by Dr. and Mrs. Roger G. Hassett of Mankato during late July and early August. A highlight of the trip was a 300-mile cruise north of Seattle to the Campbell River where the annual Tyee Salmon Derby was being held. Other features of the journey were stops at Lake Louise and Banff in Canada and at Glacier and Yellowstone National Parks. During Dr. Hassett's absence his practice was conducted by Dr. Joseph C. Von Drasek, who has been associated in practice at the Medical Center in Mankato for the past year.

* * *

Dr. James Reinhardt, formerly of Detroit Lakes, became associated in practice with Dr. Lester N. Dale of Red Lake Falls early in July. A graduate of Temple University Medical School, Dr. Reinhardt served his internship at Northwestern Hospital, Minneapolis.

* * *

The superintendent of the St. Peter State Hospital, Dr. Burton P. Grimes, was a speaker at a meeting of the Exchange Club in Mankato on August 10. The title of Dr. Grimes' talk was "Report on Your State Hospital."

* * *

An additional story will be added to the Mayo Memorial building at the University of Minnesota as a result of a new \$200,000 Federal grant, it was announced on August 1. According to present plans, construction

OF GENERAL INTEREST

of the building, which will now be at least eighteen stories high, will begin early in 1950.

Originally the plans for the memorial medical center called for a structure nineteen stories high. Later plans cut this to sixteen stories, and still later added a seventeenth. The foundations will be built to hold twenty-two stories, and the final size of the building will depend on costs.

* * *

The principal speaker at a meeting of the Winona Rotary Club on August 3 was Dr. F. J. Vollmer of Winona, who discussed the profession of medicine. He listed the qualifications which should be met by any youth who plans to enter the field of medicine, and he described the years of academic preparation and the various types of specialized training. Dr. Vollmer's talk was the first of a series by different speakers on the various professions.

* * *

Rushford acquired a new physician late in July when Dr. Norbert P. Blochowiak opened offices for the practice of medicine in the city. A graduate of the University of Minnesota Medical School, Dr. Blochowiak served his internship at Ancker Hospital, Saint Paul.

* * *

"Questions on Compulsory Health Insurance" was the title of a talk presented by Dr. Charles E. Rea, Saint Paul, at the University of Minnesota on July 20. Dr. Rea is a clinical assistant professor of surgery at the University.

The ten interns at St. Luke's Hospital, Duluth, spent August 9 fishing in Lake Superior, but their patients were not left unattended. While the St. Luke's group angled for lake trout, the interns at Duluth's St. Mary's Hospital carried out the duties of their colleagues as well as their own. The plan called for a later fishing trip by the St. Mary's interns, with the duty arrangement reversed.

* * *

It was announced on July 28 that a new clinic building would be constructed in Anoka. When completed, the twenty-four-room, air-conditioned structure will be occupied by Dr. Frank E. Mork, Dr. A. Harold Mork and Dr. Joseph Twidwell, Anoka practitioners. The building will also house two dentist suites.

* * *

Three physicians were among those named to the governor's advisory council of the Youth Conservation Commission on July 27. The physicians appointed by Governor Luther W. Youngdahl are Dr. Maurice N. Walsh, Rochester; Dr. Eric K. Clarke, Minneapolis, and Dr. H. S. Lippman, Saint Paul.

* * *

National Heart Institute grants of more than \$1,200,000 to support heart disease research work in medical schools and hospitals in twenty-one states, the District of Columbia, and Canada were announced on July 15 by Oscar R. Ewing, Federal Security Administrator.

The grants were approved by Surgeon General Leonard A. Scheele of the Public Health Service following recommendation by the National Advisory Heart Coun-



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cil. The council is a sixteen-member body composed of outstanding leaders in the medical sciences and public affairs.

According to Dr. C. J. Van Slyke, director of the National Heart Institute, the grants comprise only a portion of the Federal funds to be awarded for heart disease research during the current fiscal year. Additional grants for new heart research and for construction of heart research facilities and laboratories are expected to be announced shortly.

Established last August under authority of the National Heart Act, the National Heart Institute is one of the National Institutes of Health, the research arm of the Public Health Service, with headquarters in Bethesda, Maryland. In addition to conducting scientific research in its own laboratories, the Institute administers federal funds supporting research and training related to the cause, prevention and methods of diagnosis and treatment of heart disease in other institutions throughout the country.

* * *

Members of the Mankato Rotary Club, at a meeting on August 3, heard Dr. H. H. Russ, Blue Earth, give a talk on "The Prevalence and Treatment of Cerebral Palsy Handicapped Child en."

* * *

Dr. Lewis I. Younger, Mankato, announced on July 16 that Dr. Roger F. Hartwich, formerly of Minneapolis, had become associated with him in the practice of medicine. A graduate of the University of Minnesota Medical School, Dr. Hartwich interned at Milwaukee County General Hospital, then served in the army in Europe during World War II. Following his discharge in 1946, he took postgraduate work at the University of Minnesota and then served a three-year residency in general surgery at Swedish Hospital, Minneapolis.

* * *

Word has been received that Dr. Richard Fuchlow of El Paso, Texas, who formerly practiced in the Upper Midwest, died of a coronary occlusion early in August.

* * *

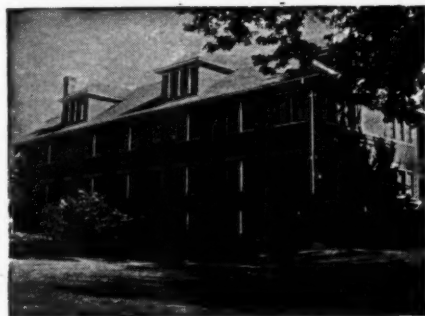
Dr. R. H. LaBree and Dr. J. J. Coll, of the Duluth Clinic, were speakers at a meeting at Grandview Hospital, Ironwood, Michigan, on August 9. Dr. LaBree discussed "Peripheral Vascular Diseases," and Dr. Coll spoke on "Liver Dysfunction."

* * *

Fifty-five grants totaling \$138,726, in support of medical research, have been awarded during the first half of this year by Smith, Kline and French Laboratories, of Philadelphia. Mr. W. F. Thompson, vice president in charge of the company's research, announced that the funds were provided as scholarships and fellowships, as aids to preclinical research and for the support of studies in various fields of clinical medicine.

* * *

Dr. A. R. Aanes of Ellsworth, Wisconsin, won the grand champion and runner-up ribbons for his dahlias in the twentieth annual flower show held in Red Wing in August. First place for roses was won by Dr. William Liffrog of Red Wing.



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Dr. James F. Bosma, Minneapolis, assistant professor of pediatrics at the University of Minnesota, and Dr. Donald R. Lannin, Saint Paul, in charge of orthopedics at the University of Minnesota Health Service, have become associated with the medical staff of the Elizabeth Kenny Institute in Minneapolis.

* * *

A chest x-ray machine was given to Rochester and to Olmsted County in July by the Olmsted County Christmas Seal organization. The machine, which will be used for many purposes in the city and county, was purchased at a cost of more than \$9,000.

* * *

Dr. and Mrs. Charles C. Merchant, medical missionaries of the Baptist General Conference, sailed from New York with their two children on August 30, bound for Tezpur, Assam, India, where Dr. Merchant will become chief of staff of Ahlquist Memorial Hospital. A graduate of the University of Minnesota Medical School, Dr. Merchant served his internship at Miller Hospital, Saint Paul, and then took graduate training in surgery at Deaconess Hospital, Minneapolis.

* * *

Announcement was made on July 31 that Dr. Evelyn Johnson had been appointed medical director of the Diagnostic Clinic for Rheumatic Fever in Saint Paul. The clinic is a public health service for children under eighteen, sponsored and financed by the Saint Paul section of the National Council of Jewish Women.

Dr. Johnson has been associated with the Minneapolis Children's Heart Clinic and Hospital for the past eight years, and she has also been affiliated with the University of Minnesota Children's Heart Clinic.

* * *

A service recognition certificate was presented to Dr. H. H. Young, Rochester, at the annual summer meeting of the Minnesota Safety Council in Duluth on August 19. Dr. Young is a member of the council's executive committee.

* * *

While Dr. Ralph H. Larson of Anoka took a week of vacation, in July, his practice was conducted by Dr. Myron J. Woltjen of the staff of Asbury Hospital, Minneapolis.

* * *

Dr. R. R. Hendrickson, formerly of Lake Park, became medical director of Sunnyrest Sanatorium in Crookston on September 1. Dr. Hendrickson, while at Lake Park, was superintendent and medical director

of Sand Beach Sanatorium, medical director of Fair Oaks Lodge Sanatorium at Wadena and medical consultant at Ottertail County Sanatorium. Dr. Selmer Johnson, a former resident physician at the state sanatorium near Walker, has replaced Dr. Hendrickson as medical director of the Fair Oaks Lodge Sanatorium and as medical consultant at the Ottertail County Sanatorium.

* * *

On August 1, Dr. John L. Delmore, Sr., completed forty years of medical practice in Roseau. He now conducts his practice in the Delmore Clinic in association with two of his sons, Dr. John L. Delmore, Jr., and Dr. Robert J. Delmore.

* * *

Dr. Philip S. Hench, Rochester, has been appointed to head a national committee of medical scientists in a study of the new rheumatoid disease drugs, cortisone (Compound E) and adrenocorticotrophic hormone (ACTH). The group headed by Dr. Hench was appointed by Surgeon General Leonard A. Scheele of the Public Health Service.

* * *

Staff members of the Ada Clinic moved into their newly constructed office building on August 1. The modernistic one-story structure contains three physicians' offices, a treatment room, laboratory, recovery room, waiting room and a double dental office. The clinic staff is composed of Dr. Bruce Boynton, Dr. Byron Kinkade and L. A. Sanders, D.D.S.

* * *

Approximately 175 guests attended an open house held in the Barnesville city hall on July 31 to celebrate the forthcoming (August 3) golden wedding anniversary of Dr. and Mrs. Alphonse Cyr. A musical program, a buffet supper and the presentation of a purse of money to the couple were highlights of the occasion. Earlier in the day, Dr. and Mrs. Cyr were guests of honor at a baseball game.

Dr. Cyr has practiced medicine in Barnesville since 1906. Always active in civic affairs, he has served as city health officer for several years and has been a member of the school board for almost twenty years. He is a graduate of the medical school at Laval University in Montreal, Canada.

* * *

It was announced on August 3 that Minnesota had granted a medical license to the first foreign-educated

OF GENERAL INTEREST

physician to qualify under the revised regulations of the State Board of Medical Examiners.

The license was issued to Dr. Robert C. Lam, a Chinese-born and Chinese-educated American citizen, who recently completed a residency in surgery at Asbury Hospital, Minneapolis. After obtaining a master's degree in bacteriology at the University of Illinois in 1940, Dr. Lam returned to China and began his medical studies at Peiping Union Medical College. He completed his medical school work at West China Union University in 1944 and interned at the Associated Universities United Hospital at Chengtu. On January 1, 1947, he began his surgical residency at Asbury Hospital, Minneapolis, and while there attended medical classes at the University of Minnesota.

Upon acquiring his license, Dr. Lam accepted a position as resident surgeon at St. Mary's Hospital, Grand Rapids, Michigan. Minnesota and Michigan have a reciprocal arrangement on licenses.

* * *

Dr. J. J. Coll, Duluth, discussed some interesting aspects of myxedema before the Range Medical Society on August 23, 1949. The meeting was held at the Esquemoba Club at Virginia.

* * *

Dr. C. M. Jessico, Duluth, will speak on "Symptoms of Insecurity in Childhood" before the Association of Childhood Educators at the meeting held at the State Teachers' College, Superior, on September 21.

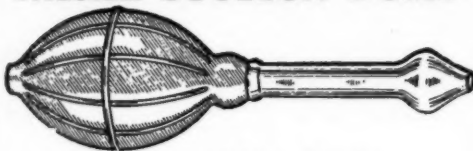
* * *

Dr. Robert V. Hodapp, son of Dr. R. J. Hodapp of Willmar, has joined the staff of the Lakeland Medical Clinic in Willmar. Dr. Robert Hodapp recently completed two years of military service.

* * *

In Norwood, Dr. Joseph D. Selmo and Dr. Grant L. Griebie recently completed the organization of the Norwood Clinic. Dr. Selmo has practiced in Norwood since 1940. Dr. Griebie, a graduate of Northwestern University Medical School in 1944, studied surgery in Chicago for two years and then served as an associate in surgery with a clinic in Great Falls, Montana, for three years. In organizing their clinic in Norwood, the two physicians added a considerable amount of new equipment to their facilities.

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On August 4, Dr. Gaylord W. Anderson, head of the mayor's poliomyelitis committee in Minneapolis, announced that twenty-seven nurses and four physiotherapists were needed at the University Hospitals and the Elizabeth Kenny Institute. The appeal was not made because poliomyelitis had reached alarming proportions in the state. The reasons given for the appeal were the following: Poliomyelitis treatment has improved over the years, so that increased personnel is needed. Furthermore, since Minneapolis is a poliomyelitis treatment center, facilities in the city are overtaxed.

* * *

It was announced on August 1 that Dr. Kenneth J. Kelley had installed a new x-ray machine in his offices at Grove City.

* * *

Grants of \$2,056,426 by the National Institutes of Health to provide continued support for medical and allied research projects at non-federal institutions, were announced on August 9 by Oscar R. Ewing, Federal Security Administrator. The grants were approved by Surgeon General Leonard A. Scheele of the Public Health Service following recommendations made by the National Advisory Health Council. A total of 217 projects will be supported at ninety-four institutions located in thirty-one states, the District of Columbia, Alaska and four foreign countries.

* * *

In Blue Earth, Dr. and Mrs. John A. Broberg, both eighty-eight years of age, celebrated their sixtieth wedding anniversary on August 20. Dr. Broberg retired from his medical practice seven years ago, after completing fifty years of service to residents of Faribault County. A graduate of the University of Michigan Medical School, Dr. Broberg first began practice in Delavan in 1892. After six years there, he moved to Blue Earth, where he has since remained.

* * *

Dr. and Mrs. M. O. Oppegard returned to Crookston in August after a two-month trip through the countries of western Europe. While overseas, Dr. Oppegard attended a medical meeting held in London early in July and visited clinics and hospitals in several European medical centers. A feature of the trip was a journey to the German city of Neustadt in northern Bavaria. Several citizens of Crookston have been sending aid to the needy in Neustadt, and Dr. Oppegard, as mayor of Crookston, made the visit as a good-will gesture to the people of that German community.

* * *

Nearly \$6,000,000 was contributed to the National Society for Crippled Children and Adults through the 1949 Easter Seal campaign. Practically all of this was contributed through a direct-mail campaign by member societies throughout the forty-eight states, the District of Columbia, Hawaii and Alaska. Funds are used for direct relief, education and research. More than 90 per cent of the funds raised annually remain in the state for local use.

* * *

According to the Public Health Service, the life expectancy of a white male at birth is now 65.2 years and

OF GENERAL INTEREST

that of a white female is 70.6 years. The expectancy of a non-white male at birth is 57.9 years and that of a non-white female is 61.9 years.

* * *

Members of the Minneapolis Woman's Club presented a check for \$5,600 to the Minnesota Mental Hygiene Society on August 24, to be used for the first mental hygiene clinic for children in Minneapolis. The amount was far more than double the \$2,000 promised by the club earlier in the year. The mental hygiene clinic will be located at St. Barnabas Hospital and is expected to be open early next year.

HOSPITAL NEWS

On October 1, a hospital limited to convalescent and chronically ill patients will be opened in Aitkin. Dr. Erich F. Blaufuss, a veterinarian, is converting his eleven-room residence into a twenty-bed hospital, which he will manage. All physicians will be welcome to bring patients to the hospital. Among the facilities offered will be a contagion ward for the isolation of patients with communicable diseases. The hospital, which is located just outside the village limits of Aitkin, will be known as "The Gables."

* * *

The first public health center to be constructed under the Hospital Survey and Construction Program in Minnesota will be ready for occupancy early next year. Started March 21, 1949, the public health center is being constructed near the downtown section of Rochester, overlooking the Zumbro River. Two stories high and L-shaped, the building will house the offices, laboratory, and clinic facilities of the Rochester-Olmsted County Health Unit and District Number III of the Minnesota Department of Health, as well as city welfare offices.

Plans for a Rochester health center, where public health facilities could be grouped together under one roof, were first considered twenty-five years ago when Dr. C. H. Mayo was Rochester health officer. Because the Department of Health moved into the new city hall, hopes for a health center were temporarily abandoned. The second attempt is now about to become a reality, with construction proceeding satisfactorily and the likelihood that health and welfare personnel will move into the new building about February 1, 1950.

The total cost of the building is approximately \$270,000. Of this amount, the Mayo Association gave

\$150,000 the City of Rochester appropriated \$30,000, and the remaining one-third (\$90,000) is available under the provisions of the Hill-Burton Act (the Hospital Survey and Construction Program).

MINNESOTA MEDICAL SERVICE

At the completion of the seventh month of 1949, Blue Shield payments to Doctors of Medicine in Minnesota for services rendered Blue Shield subscribers and their dependents passed the half million mark. This is evidence that the people of Minnesota are taking readily to Blue Shield and also that the doctors of Minnesota are beginning to feel the effects of their own plan.

A letter has been received in the Blue Shield office written by a Blue Shield subscriber in which the subscriber sets forth the thoughts of a general practitioner in southern Minnesota. The criticism is that in general Blue Shield does not pay enough on most cases, the general practitioner does not get a fair break. It is fortunate that this feeling is in a small minority. However, it would seem that such an impression should not exist at all. It would be wonderful if every doctor in Minnesota could feel that Blue Shield is his own plan, that it is to his advantage to promote it. Many groups of physicians have sponsored Blue Cross and Blue Shield campaigns both organizationally and financially. They have talked to groups in person and over the radio and have given money for paid advertising and considerable time to planning campaigns. When the people in a community hear "Doctor Joe's" voice on the radio they know Blue Shield is a good plan and the plan for them because "Doctor Joe" said so. When they see an advertisement in the paper signed by all the doctors in a community, they know they should sign up for Blue Cross and Blue Shield because the doctor's sponsorship indicates that the plan is legitimate and will benefit the patient when he most needs assistance.

Eventually, the good a group of doctors has done is heard in the Blue Shield office, but as soon as one doctor in Minnesota makes a statement like that above it is heard immediately. If questions come up requiring information which is not readily available and this information is in the Saint Paul office, feel free to write or call to obtain it.

A new policy is being adopted to inform doctors regarding Blue Shield and Blue Cross. Bi-monthly a



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Minneapolis Minnesota

bulletin will be sent to the president and secretary of each County Medical Society to be read at each County Medical Society meeting.

At the completion of the first six-month period, there were 29,327 Blue Shield single subscriber contracts in effect and 45,500 family contracts. These contracts represent a total of 190,853 persons in Minnesota covered by Blue Shield. A year ago there were 32,550 persons covered by Blue Shield. Also a year ago Blue Shield cases averaged 4.3 per day, but today the average has increased to 6.1 per day. This is an increase of nearly 1,500 per cent.

Over 8,498 more persons in Minnesota received care under the Blue Cross Plan during the first six months of 1949 as compared with the number receiving Blue Cross benefits during the first six months of last year.

Out of every 1,000 persons covered by Blue Cross, fifty-eight more persons received Blue Cross benefits during the first six months of this year as compared with those receiving benefits during the same period in 1948.

Respiratory diseases ranked first in frequency of occurrence, maternity benefits ranked second, injuries and poisoning third, and digestive diseases fourth.

Although maternity cases ranked second in frequency of occurrence, the number of cases per 1,000 contracts remained the same.

Maternity cases numbered 9,805 at the end of June, and Blue Cross maternity benefits totalled \$773,679.

Between January 1 and June 30 of this year, Blue Cross subscribers received benefits totalling \$4,671,456 in all, and received 414,962 days of hospital care.

Of the total Blue Cross benefits, during April, May and June of this year, as many as sixty-eight cases were over \$1,000.

An unusually large hospital bill was received during the month of July. The total hospital bill for a sixty-one-day-stay pneumonia case was \$2,783, on which the Blue Cross allowance was \$2,445.

Current enrollment in Blue Cross totals 935,026, and Minnesotans have saved themselves over \$35,000,000 in hospital bills during the past sixteen years because they were Blue Cross subscribers.

Nationally, there are now 33,745,826 Blue Cross subscribers representing over 21 per cent of the total population in the United States.

ANESTHESIA FOR THORACIC PROCEDURES

(Continued from Page 897)

the intercostal space until the chest is tightly closed. The lobes are then expanded and the catheter removed.

Upon returning to his room the patient is placed in an oxygen tent if any signs of hypoxia are present. Sedation should be kept to a minimum. Excessive sedation will depress respirations and also interfere with the removal of pulmonary secretions by depressing the cough reflex.

The postoperative pain may be lessened by blocking the affected intercostal nerves with one of the long acting anesthetic agents. Obliteration of this pain will promote earlier ambulation and increase respiratory exchange. Intravenous alcohol has also been used successfully postoperatively. This solution makes the patient more comfortable without undue respiratory depression.

Summary

Anesthetic problems created by thoracic surgical procedures have been discussed. The maintenance of a patent airway, prevention of anoxia, replacement of blood and fluid and the control of untoward cardiac stimuli should be the major considerations of the anesthesiologist during thoracic procedures.

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